DOCUMENT RESUME

ED 159 771 EA 010 826

AUTHOR Beck, Tinsley M.
TITLE Openness as a Variable in Educational Research. The Australian Open Area Schools Project Technical Report No. 3.
INSTITUTION Western Australia Education Dept., Perth.
PUB DATE 75
NOTE 91p.; For related documents, see EA 010 827-828, ED 117 806, and ED 118 530

EDRS PRICE MF-$0.83 HC-$4.67 Plus Postage.
DESCRIPTORS Comparative Analysis; *Concept Formation; *Definitions; *Educational Research; Elementary Education; Foreign Countries; *Open Education; *Open Plan Schools; Research Methodology; *Research Problems; Social Science Research; Teaching Methods
IDENTIFIERS Australia

ABSTRACT

The subject of this report is an approach to teaching that has become known in recent years as "open education." An attempt is made to answer the questions, What is a research variable? and, Can openness be a variable in educational research? Part 1 serves the purpose of a position statement. Certain principles are declared to be the guidelines or criteria that should be heeded in preparing a new concept for admission to the research literature. The principles are explained and defended and some evidence is presented to indicate that they are not universally recognized by researchers, to the detriment of the quality of the research. Part 2 is an attempt to apply the principles to the concept of open education. The descriptive and research literature on open education is surveyed, a definition is proposed, and the issues involved in preparing a measuring instrument are discussed. The final chapter explores the question of whether the concept of openness is likely to prove useful in educational research. (Author/MIF)

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# THE AUSTRALIAN OPEN AREA SCHOOLS PROJECT

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# OPENNESS AS A VARIABLE IN EDUCATIONAL RESEARCH

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Fitzpatrick, G.S. and Angus, M.J. *Australian Open Area Schools Project, Technical Report No. 1: Through Teachers' Eyes: Teaching in an Open Space Primary School.* Perth: Education Department of Western Australia.1974.

Fitzpatrick, G.S. and Zani, T.L. *Australian Open Area Schools Project, Technical Report No. 2: Teachers' Comments on Open Area and Conventional School Design.* Perth: Education Department of Western Australia. 1974.

AUSTRALIAN OPEN AREA SCHOOLS PROJECT

Technical Report No. 3

# OPENNESS AS A VARIABLE IN EDUCATIONAL RESEARCH

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PARLIAMENT PLACE, WEST PERTH, 1975

"WE DO NOT SAY, 'IF YOU CAN'T MEASURE IT, IT DOESN'T EXIST.' WE DO SAY, 'IF YOU CAN'T DEFINE IT CLEARLY, YOU CANNOT TEACH IT PURPOSEFULLY OR MEASURE IT VALIDLY.'"

(Ebel, 1975, p.85)

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ACKNOWLEDGEMENTS

This Project has been supported in part by a grant from the Australian Advisory Committee on Research and Development in Education to Dr A.N. Stewart, Director of Special Services, Education Department of Western Australia.

It is a pleasure to acknowledge the assistance of colleagues who have contributed to the ideas presented in this report, especially the Superintendent of Research, Max Angus and Research Officers, Anna Alderson and Lester Zani. In addition Mr Zani has scrupulously read the entire manuscript and applied his editorial hand to numerous improprieties of argument and convention. For the remaining blemishes the author is responsible.

The typing of drafts and the final manuscript has been competently and cheerfully completed by Margaret Hollier.

The report has been adapted from the author's Master of Education dissertation which was submitted to the Faculty of Education of the University of Western Australia in 1975.

# PREFACE

The Australian Open Area Schools Project has been commissioned by the Australian Advisory Committee for Research and Development in Education to study some contemporary developments in school architecture and in methods of teaching. To some extent the two topics are seen as independent but both are of great importance - architecture because of the huge expenditure involved and the long term effects of building schools which may not be conducive to effective education; teaching practices because many teachers and parents are confused about certain modern trends and concerned about the real or imaginary dangers of falling academic standards, declining discipline, and so on.

Although there may be numerous ways in which a subject can be investigated, the most general model for research studies is to find out what kinds of relationships occur between specified variables. One of the first tasks for a researcher embarking on a new subject is to determine precisely what that subject is - to be clear about the meaning of the term and the nature of the phenomenon to be measured. If this should appear to be obvious common sense, it was nevertheless reported by Charters and Jones (1973) that:

> What is *not* standard practice in evaluation studies is to describe, let alone to measure, how the programs in "experimental" and "control" situations actually differ from one another - or even to certify that they do. A serious consequence of slighting the alleged "independent variable" is that elaborately designed evaluation studies may sometimes end up appraising non-events, with no one the wiser. (p.5)

The subject of this report is not school architecture but an approach to teaching which has become known in recent years as 'open education'. An attempt has been made to answer two questions.

1. What is a research variable?
2. Can *openness* be a variable in educational research?

Part I serves the purpose of a position statement. Certain principles are declared to be the guidelines or criteria which should be heeded in preparing a new concept for admission to the research literature. The principles are as follows.

1. A research concept directly denotes a property or attribute rather than an object or entity.
2. A scientific term has a conceptual or constitutive meaning and not only an operational definition.
3. A term used in a hypothesis or theoretical statement can have only one meaning at a time. This has implications for so-called global concepts and for the assumption that a research concept can consist of numerous sub-concepts.

These principles are explained and defended and some evidence is presented to indicate that they are not universally recognised by researchers, to the detriment of the quality of the research.

Part II is an attempt to apply the above principles to the concept of open education. The descriptive and research literature on open education is surveyed, a definition is proposed, and the issues involved in preparing a measuring instrument are discussed. The final chapter explores the question of whether the concept of openness is likely to prove useful in educational research.

Preliminary evidence suggests that 'openness' is a term to which it is possible to attach a specific conceptual meaning that can be successfully operationalised in the context of Australian primary schools. It is, however, heavily laden with questions of value and because of this may be seen as an educational goal as well as a means or a strategy for achieving other objectives. Whether the concept of openness will be of long term value in education is not yet clear.

# PART 1
# CONCEPTS IN THE SOCIAL SCIENCES

## INTRODUCTION

The researcher needs to have a clear understanding of the concepts which can legitimately be employed in hypotheses. The great degree of flexibility with which words can be used in ordinary language makes the task of identifying and isolating phenomena for research more difficult than it may appear to the casual observer or even to the experienced researcher.

Words in common English may vary in a number of ways. Many nouns which refer either to objects or to more abstract concepts (storm, fun, priest) have adjectival counterparts (stormy, funny, priestly) which by further inflexion again become nouns (storminess, funniness, priestliness). Concepts are also said to vary according to their degree of abstraction, which may mean their apparent remoteness from material reality or it may refer to their generality, the extent to which they subsume other more concrete or specific concepts. Furthermore, many terms in common use are given multiple meanings, particular meanings being indicated by the contexts in which the terms are used, while others have such a vague and unlimited range of meanings that it is difficult, and often not attempted, to find out exactly what is meant even in particular contexts.

This is not an exhaustive catalogue of the vagaries of language but a sample of the reasons why it is necessary for a researcher to know what kinds of words make sense in the more rigorous and limited context of scientific research.

The chapters in Part 1 deal with several problems which, unless they are clarified, tend to cloud the meaning of theoretical terms. For example, a researcher who wishes to study "the effects of open education" has to realize that what he is really concerned with is openness of education, otherwise he will not have a variable with which other data can be related. Another problem often arises where researchers try to operationalise a concept without knowing what the concept means. Thirdly, a great deal of confusion has resulted from the widespread assumption that some research

concepts are more global than others and consist of multiple sub-concepts. It is argued here that this is a false assumption, and that erroneous interpretations will continue to be made unless it is clearly understood that a property concept has a single meaning, though the domain or object to which the property applies may have multiple parts, components, facets or elements.

There are, accordingly, two main sets of terms used in this analysis. In some circumstances the terms within each set are interchangeable, in which case an arbitrary choice has been made. One set includes terms such as 'construct', 'variable', 'property', 'characteristic', 'attribute' and 'quality'. The other set is represented by 'object', 'referent', 'entity', 'thing' and 'domain'. It is not the purpose of this study to distinguish between the terms within each set, but it is of central importance that the differences between the two sets of terms be understood.

# CHAPTER I
## PROPERTIES OF THINGS

For several reasons it may be difficult to focus clearly on the important fact that a research variable is a property or attribute of a thing.

1. Properties are commonly given names (nouns) which thus tend to make them appear grammatically equivalent to things. 'Intelligence', 'authoritarianism' and 'motivation' seem more like entities in their own right than when they are expressed in adjectival form to describe intelligent, authoritarian and motivated persons.

2. Properties, qualities, attributes and characteristics do require things of which to be the properties. It is therefore inevitable that objects (also symbolised grammatically by the use of nouns) are involved in research studies - pupils, classrooms, teachers, economies, organisations, crops, trees. Yet these things are always classified or measured, for research purposes, in respect of their possession of *properties* which happen to be relevant to the research. If the objects being researched are simply counted, then number becomes the property of a set of objects.

3. Some terms which appear in one research context as things may appear in another research context as properties. For example, if teachers were the class of things in respect of which certain characteristics are being investigated, one of their properties or characteristics may be level of school in which they teach. The categories or values of this property (variable) may be designated as pre-primary, primary, secondary, tertiary. Primary school is in this context one value of a property of teachers, who also have numerous other properties. However, primary schools may in another study be the things in respect of which two or more properties are being investigated, for example architectural design and co-operation among teachers.

The last sentence in (3) above raises an additional point to which Charters (1967, p.19) drew attention:

> Every hypothesis has at least two variables (X and Y), and the variables must share the same referent. A hypothesis states that when a class of things differs in one respect the same class of things will differ in another respect.

Whereas there are some instances in which this principle is easy to recognise, for example where the same pupils are measured or classified on two characteristics, it appears that in the above example (researching architectural design and co-operation among teachers) the *referent* is two-fold: schools and teachers. Charters (1967, p.20) admitted that:

> Sometimes, however, the referent of the variables is cloudy and there is opportunity for confusion to set in.

Nevertheless, it remains a fact that to ascertain the relationship between the two variables it is necessary to obtain "pairs of measures" which can be "inspected for co-variation" (Charters, 1967, p.20), and the only way in which measures can be paired is to identify them as pertaining to the properties of a common referent. In the present example it may appear moot as to whether the referent is school or set of teachers (co-operation is not seen here as a property of an individual teacher). As Charters would set it out:

| | Variable X | Variable Y |
|---|---|---|
| Referent: | Primary school | Primary school |
| Attribute: | Architectural style | Co-operation among teachers in the school |
| OR | | |
| Referent: | Primary school staff | Primary school staff |
| Attribute: | Architectural environment | Co-operation among members |

In this instance the number of pairs of measures would be the same whichever referent was regarded as focal. In other cases also there may be options but the alternative chosen will reflect a particular line of enquiry and lead to different measures being taken. It is not germane to the present study to pursue this particular matter any further.

The particular importance of regarding research variables as properties, in spite of the possibility of their being spoken of grammatically as things, will become more apparent in the context of discussion in subsequent chapters. With few exceptions, the research literature is not strong on this point.

One of the clearest statements is that of Charters, who said, (1967, p18):

> A variable refers to some way in which persons, objects, conditions, or events can differ (vary) from one time to another or from one case to another. Variables can be regarded as the *attributes* of a class (or category) of things. E.g., people can differ in height, sex, aggressiveness, rate of speaking, amount of information about the United Nations. and so on *ad infinitum*. Events can differ in duration, importance, order of occurrence, in being near or far from something, and so on. Each of these bases of difference is a variable...
>
> Variables have two features to which the student must attend: (a) a *referent* and (b) a *mode of variation*...The referent of a variable is that class of thing (persons, objects, ideas, events, etc.) the members of which are said to vary...every variable has some denotable referent.

Snow (1973, p.99) chose to follow Dubin. Although "the identification of appropriate units of analysis" remains an important task in every effort to formulate new theoretical statements, it is possible to describe all such units "in terms of properties of 'things', usually persons or social groups".

Dubin (1969) stated initially that:

> ...the things about which a science tries to make sense are its concepts. (p.27)

However, in view of the somewhat broader meaning attaching to the term 'concept', and some confusion because of this, he was led

> to employ the more neutral term *unit* to designate the things out of which theories are built. (p.28)

Dubin then explained that the units were in fact properties:

> ...we build our theories about the properties of things rather than about the things themselves. We focus our theories upon selected characteristics of objects rather than upon the objects. This may at first appear curious because intuitively we may feel that objects are more visible and more readily apprehended than characteristics of them. We can see individual persons, but we have to struggle to invent methods for apprehending their morale. We can walk around and map the boundaries of a city, yet we intrude something we conceptualize as "ecological structure" when examining the relationships between a central city and its suburbs...These are properties of people and cities, not the things themselves. (p.30)

It is pertinent to note, because other writers differ in their use of the same terms, that Dubin distinguished between properties that were attributes and those that were variables:

> An attribute is a property of a thing distinguished by the quality of being present...A variable is a property of a thing that may be present in degree. (p.35)

Rosenberg (1968) used the term 'property' to denote a particular class of variables:

> A "property" is a relatively perduring characteristic of the individual which is not dependent upon circumstances for its activation. The major sociological properties of an individual are social groups, collectivities, or categories, such as sex, age, race, religion, class, nationality, region, marital status, birth order, etc. A disposition, on the other hand, is a potential or tendency of the individual which may be activated under particular circumstances. Opinions, attitudes, values, abilities, habits, personality qualities, or "powers" generally are dispositions, in the sense that they only find expression under the impetus of certain stimuli or in the presence of certain conditions. (p.76)

The distinction between properties and dispositions and various other classes of variables may be useful but this does not need to obscure the fact that all variables are attributes and not things or entities as such.

Kerlinger used the term 'property' but did not highlight the importance of understanding that all variables in research were properties and not things:

> Scientists somewhat loosely call the constructs or properties they study "variables". Examples of important variables in psychology, sociology, and education are: social class, sex, income, level of aspiration, anxiety, religious affiliation, hostility, prejudice, authoritarianism, motivation, discipline, introversion, conformity, and, of course, intelligence and achievement. It can be said that a variable is a property that takes on different values. This says, to put it redundantly, that a variable is something that varies. (Kerlinger, 1965, p.32)

Some of the variables referred to by Kerlinger will come under closer scrutiny in later chapters.

The purpose of this chapter has been to draw attention to the important fact that it is properties, attributes, characteristics and qualities, rather than objects, entities and things, which constitute the concepts or variables of science.

The importance of making the principle explicit rather than implicit or assumed has not been fully explained at this stage. It may be obvious to some people that things (people, chairs, schools) do not as such normally represent variables. A person is a person, and however much one may differ from the next on an unlimited number of properties, the person property (in many research situations) has only one value and therefore constitutes a thing, not a variable. What can happen is that in another investigation 'person' becomes one of the values in a variable or property such as 'species' (of mammal).

There are practical and not only academic reasons for making these points clear, and the argument in following chapters may indicate that the points are not obvious to many researchers.

# CHAPTER II
# DEFINITIONS

It scarcely needs arguing that communication is aided if the terms employed convey at least to some extent the same meaning to both senders and receivers. It becomes especially important in the building of a theory that the concepts or properties to which the terms refer can be specified with a reasonable lack of ambiguity. But what is a reasonable quality of specificity, and how can it be achieved? There have been various answers, one of the most influential being that of operationism, with its emphasis upon the importance of operationally defining terms which apply to research concepts.

It is not the purpose of this chapter to deal exhaustively with the complex issues surrounding the subject of operational definitions, but in searching for rules to apply in practical situations one cannot avoid a certain degree of embroilment in some of the disputes which have arisen in recent decades.

The position adopted here is that described by Kerlinger (1965, p.33ff), who recognized the need for two kinds of definitions, the first being of the kind found in dictionaries, the second being more like a formula for measurement. In the following statements by Kerlinger the word 'construct' may be assumed to mean the same as 'concept' or 'variable':

> A *constitutive definition* is a definition that defines a construct with other constructs. For instance, we can define "weight" by saying that it is the "heaviness" of objects. Or we can define "anxiety" as "subjectified fear"...all constructs, in order to be scientifically useful, must possess constitutive meaning. This means that they must be capable of being used in theories.
>
> An *operational definition* is a definition that assigns meaning to a construct or variable by specifying the activities or "operations" necessary to measure the construct or variable...a sort of manual of instructions to the investigator.

Operationism, which Kaplan referred to as a form of semantic empiricism, took a harder line in asserting that the *operations* are *all* that one can know about the meaning of a term:

> A few decades ago the cry for "operational definitions", especially in psychology, rose almost to a clamor. It was felt that here at last was the way to give our concepts of human behavior a solid scientific basis. By now those early extravagant claims and hopes...have been considerably moderated or even abandoned altogether, in a way that parallels the history of the verifiability theory of meaning.
>
> The basic idea of operationism was attractively simple. The application of concepts to the materials of experience calls for the performance of physical operations on the objects of experience. Quantitative concepts like "length" and "mass" depend on appropriate measurements...To know these operations is to understand the concept as fully as science requires; without knowing them, we do not know what the scientific meaning of the concept is, nor even whether it has a scientific meaning...Intelligence, in the famous dictum, is what is measured by intelligence tests. (Kaplan, 1964, p.34)

Not only has the view represented by this "famous dictum" had sincere adherents in recent times, but it was presented with considerable force by Brodbeck as recently as 1963 in Gage's *Handbook of Research on Teaching*:

> The characteristic abstractness of scientific concepts, like mass or IQ, lies in the fact that these terms cannot be defined by simply listing a cluster of directly observable attributes... scientific definitions are rarely of the simple dictionary type ...precisely because they name features of the world that can be discerned only under certain conditions. And these conditions are part of the meaning of the concept. They must therefore be included in the defining properties of it. To do this requires an *operational definition*.
>
> ...For instance, in order to determine a child's IQ, we must first administer a test of a specified kind, then observe his performance on the test, and finally make certain calculations. All of these conditions define the meaning of IQ as it appears in the sentence 'John has an IQ of 115'. (Brodbeck, 1963, p.49)

Although it is true to say that one would not know exactly what was meant by "IQ of 115" without knowledge of the test used and the calculations performed, to push this line of argument to its logical conclusion leads to the question of whether one would know even then. In other words, once you start itemising details that are necessary for the definition of a concept how can you determine when you have sufficient information? What sort of mood was the child in when he performed the test? If the operationist is content to list only a certain set of conditions for the defining of a concept, which, in practical terms, he probably would have to be, there is a case for saying that the whole process is rather arbitrary.

Kaplan (1964, p.40) discussed this difficulty:

> We speak of "the" operations for applying a particular concept; but specifically what constitutes the identify of an operation? There is a proverb that when two say the same, it is not the same; how is it when two do the same? What justifies the assumption that the operation I perform is the same as the one you carry out? The operationist principle is that different operations define different concepts. Without the assumption, therefore, no two scientists could ever understand any scientific idea in the same way, and mutual criticism or corroboration would become impossible. The difficulty arises even for a single scientist: each performance of the operations is different in some respects from any other. Unless these differences are dismissed as irrelevant, it is impossible to replicate even one's own experiments. As Gustav Bergmann has pointed out "...there is no a priori rule to distinguish relevant from irrelevant variables". Constancy of meaning would depend on empirical constancies which cannot always be anticipated.

Further extracts from Brodbeck (1963) serve to illustrate the operationist principle that different operations define different concepts:

> A conservative, as this political scientist uses the term, is, by definition, an individual who gives a certain pattern of responses to a battery of questions...For if a different battery of questions were administered, we would not expect the same pattern of responses. The measuring procedure is part of the meaning of the concept. (p.50)

> ...the concept of a "permissive" teacher is given referential meaning by operationally defining it in terms of responses to a battery of questions. (p.57)

> Once a heroic rallying cry in the behavioral sciences, operationism is now every day good scientific practice there as elsewhere...It merely clarifies the form definitions of scientific concepts must take in order to determine when statements containing these terms are true or false...The scientist's concept is not that of common sense. His concept means only what he says it means. This meaning need not include all or even any of the meanings various people associate with the concept. (p.62)

Several comments seem to be called for with regard to this whole issue. Firstly, the notion that the scientist's concepts are not those of ordinary human beings seems to be pushed too far. It is misleading to imply that scientific concepts are the only ones that are characteristically abstract, that they are the only ones that cannot be defined by simply listing a cluster of directly observable attributes, and that therefore scientific definitions are rarely of the simple dictionary type. A more balanced view would be that if a term has several meanings in common parlance it

is necessary, for conducting research and for engaging in conversation, to be sure that the particular meaning is made clear for that occasion. The scientist at the work face needs to explain how he has measured (operationalised) the concept so that his procedures can be verified, criticised, replicated or modified by other researchers. The development of theory is a public enterprise. If scientists wish to call their descriptions of procedures 'operational definitions' they are entitled to do so, but it is doubtful that this is really a substitute for, or a complete expression of, the *meaning* of a term. There is simply more at stake when the scientist uses a term in a hypothesis than there normally is in a casual conversation, and he needs to be correspondingly more careful to express the meaning he attributes to the term.

Secondly, operationism is a principle concerned with what Rudner (1966, p.20) called the 'operational *conveyance* of meaning' - "the process of conveying the meaning of a term by specifying the operations required to test for the presence of the thing to which that term refers". Kaplan too accepted that operationism was concerned with the specification of meaning, and he rejected as a misdirected criticism of operationism:

> ...the question of why one set of operations is selected rather than another, why *that* particular concept is given an operational definition. If intelligence is defined only by the tests, how shall we explain why the tests were constructed in just that way, or even why they were constructed at all. The question is indeed an important one, but that operationism itself provides no answer is no shortcoming of operationism. For the same question can be directed to *any* principle of specifying meanings ...Why they are selected for service in the scientific enterprise is a matter, not of their meaning (provided only it be clear), but of their validity or truth. We need not suppose that intelligence tests are designed to measure something whose meaning is already known. The meaning is defined by certain operations, and the intelligence test constructed as it is, in the expectation that the decision to select *those* operations will be useful for the formulation of psychological laws and theories. Operationism displays no fault in not making clear the logical ground for such an expectation. Its task is only to make clear what the expectation is about. (Kaplan, 1964, p.40)

But there seem to be two issues intertwined here. The one addressed above by Kaplan is the question of why one *would* think of using a concept; the other is how you *could* think of using it if you did not have at least some notion of its meaning. Undoubtedly one's understanding of a concept continues to develop with increasing experience, including the experience of attempting to operationalise it for measurement purposes, but even to contemplate the process of assembling a set of test items or operations requires some initial conception of what they would have in common, a conception, moreover, which might be instanced in examples far more numerous than those selected for a particular research occasion.

Kaplan made a similar point when he said:

> ...science must allow for the possibility of the same concept being measured or applied on the basis of totally different operations. (p.41)

He referred to the fact that if a dozen calculations of "the age of the universe" were made by different procedures, we should have to say that twelve different "ages" are in question:

> We should like to be able to say that...they all measure the same thing, and this statement is precisely what operationism must deny. (p.41)

Thirdly, it would seem that part of the problem and confusion lies in the fact that Brodbeck saw concepts as falling into distinct categories - those which were operationally defined and those which were not - rather than holding the alternative view, supported by this writer, that concepts in research need to have both: a constitutive meaning at all times, and an operational meaning for a particular study:

> There is a sense, of course, in which no instance of an operationally defined or dispositional concept is directly observable. Unlike names for physical objects and their simple characters, these concepts, as we saw, are defined by means of a conditional or 'if-then' sentence. And we saw, too, that a sentence containing such a concept, like 'soluble', will be true of a certain substance if and only if a certain conditional is true, namely that if a sample of this substance is put in water, then it dissolves. (Brodbeck, 1963, p.64)

Again there appear to be two issues. Brodbeck was earlier quoted as saying that scientific concepts have to be operationally defined because they are observable only under certain conditions, and that to understand the meaning of a term you also have to know this. But to proceed from that premise to the more extreme view that this entails a full specification of the instrument and the calculation of scores and so on is an unwarranted extension of what is a valid but rather obvious point. Who would have assumed that a person's intelligence could be observed while he was asleep?

But there is yet another source of confusion, namely that Brodbeck thought that t... opponents of operationism are committed to the postulation of entities which "underlie" the observed behaviour. One would rarely hear of solubility being postulated as an entity, though it is probable that people have spoken of intelligence in grammatical terms which made it sound like an entity, and Brodbeck attributed to the opposition party that they regarded 'hunger' as a state, or trait, or entity that underlay the observed behaviour - being given food and eating it.

A response to this supposed conflict would be to say that nobody in his right mind would re.fy a concept such as hunger. It is not a kind of gremlin which lies behind the fact that people have to keep on eating or else die of starvation. Then what is the nature and status of what are commonly referred to as 'constructs'? What does it really mean to assert that regardless of the importance of saying operationally what one means by a certain term, it is admissible and necessary to accept, and to work from, a constitutive meaning or conceptual definition that entails more than is represented in a catalogue of items in a particular test?

If a term employed in research has only an operational definition, or is represented wholly by a list of specific events, there may be serious doubt as to whether the events really do represent a concept or construct at all. To be able to say only that construct X is *that which* is measured by a particular set of test or questionnaire items seems to leave a serious gap from a common sense point of view. It is too restrictive to say that a set of questions is, literally, the variable or property that we are interested in. It must be acknowledged that the questions and responses represent something else (the "that which"). There is therefore of necessity some kind of abstraction or generalization required to interpret a set of items or operations. Once this is granted, there is then available, separate

from the operations, a concept which serves as an external, meaningful criterion for the generation of more or better items to operationalise the variable, especially in different circumstances.

If adherents to both viewpoints kept in clearer focus the fact that the concepts with which they are both concerned are properties and not things, there would be less ground for disagreement. There is something fatuous about arguing over whether the items in a test do or do not represent an underlying entity, when entities are not the variable of research. There is in fact relative agreement about the real entities - persons, schools, groups - which have the properties that vary. The constructs then should be regarded as convenient abstractions by means of which entities/objects/things may be described or classified. A construct is operationalised by an open-ended ensemble of qualities or incidents which logically and empirically cohere in such a way that it makes sense to subsume them under a single term. If a supposed or hypothesised set of instances fails to cohere when under logical and empirical investigation, then either the term or its definition or the particular set of operations can be abandoned or modified depending on the nature and extent of the failure. The material world is not offended by such intellectual activities. Intelligence is not a thing, it is a property/quality of persons, who should be regarded as *being* more or less intelligent, not *having* intelligence.

It is the responsibility of all researchers to describe clearly what procedures they employ when measuring or classifying things. The only additional privilege that must be preserved is the right to define in general conceptual terms what quality it is that enables numerous observations to be grouped under a common property or attribute term.

# CHAPTER III

## ONE MEANING AT A TIME

The proposition to be examined in this chapter is that each variable in a research hypothesis must be represented by a term which, on that occasion, has only one meaning. The first response to this proposition might well be: "Of course. How could it be otherwise?" Reference could be made to the previous chapter dealing with definitions to indicate that having already emphasized the importance of making the meaning of terms clear by conceptual and operational definitions there should not be need for further discussion of that point. But researchers seem to be adept at finding more sophisticated ways of engaging in double talk. Using a word in a way which gives it two different meanings simultaneously is the essence of punning. Although researchers as such are not given to intentional punning while engaging in the serious business of formulating theories, it is a subtle form of the same thing to assert that certain concepts of research are composed of sub-concepts, or that a variable contains component variables or factors, or that a term can have a "cluster of meanings" or "several referents", as Dreeben (1968) stated in the following passages:

> Independence has a widely acknowledged though not unequivocal meaning. In using it here I refer to a cluster of meanings: doing things on one's own, being self-reliant, accepting personal responsibility for one's behavior, acting self-sufficiently, and handling tasks with which, *under different circumstances*, one can rightfully expect the help of others. (p.66)

> The concept of achievement, like independence, has several referents. It usually denotes activity and mastery, making an impact on the environment rather than fatalistically accepting it, and competing against some standard of excellence. Analytically, the concept should be distinguished from independence, since, among other differences, achievement criteria can apply to activities performed collectively. (p.70)

Rosenberg's analysis of "global concepts" raised the same issues:

> The general point is that many of the global concepts with which the social researcher deals are composed of a number of sub-concepts which enter into it (sic). These are *components*. Education, income, occupation, family, etc., are all part of social class. Similarly, when we speak of an "authoritarian personality", we mean someone with a particular complex of characteristics: conventionalism, authoritarian submission, authoritarian aggression, anti-intraception, superstition and stereotypy, power and "toughness", destructiveness and cynicism, *etc. If we find that authoritarians differ from others in some* regard, we might still wish to know which of these subconcepts was most crucially implicated in the particular result. (1986, p.41-42)

What can be meant by asserting that a global concept is composed of sub-concepts or components which enter into it? Is this compatible with the proposition that a term used seriously must have one meaning at a time? On the other hand, are we not trying to dispute the well known fact that the essence of logical thinking is the ability to classify and subclassify objects in the world, and that therefore there must continue to be such things as superordinate concepts which subsume other (sub-) concepts?

Let us then examine what could be meant by a superordinate concept, or a more general concept. Presumably some homely examples would be words like 'furniture', which includes chairs, tables, cupboards, and so on; or 'fruit', which includes apples, oranges, grapes, and so on; or 'vehicles', which includes cars, trucks, bicycles, beach buggies, and so on, and cars may be further subclassified into Holdens, Toyotas, and so on. The common element in these examples is the phrase 'and so on'. This draws attention to the fact that the superordinate term has a *meaning that is more than the sum of the examples or instances* which could be listed on any one occasion.

The superordinate concept is an abstraction of certain property values which the instances have in common, such that it is always possible that a new instance or sub-type will be invented or discovered. The important point here is that once you know the meaning of 'fruit', the discovery of further instances does not change the meaning of 'fruit'. The dictionary or conceptual meaning is unchanged, no matter how many surprises you may get when you visit a fruit market in another country. Certainly one's factual knowledge about fruit may go on expanding indefinitely - more varieties, how to grow them, how to cook them, which ones taste sweet, how long they take to ripen - but unless you initially had a misunderstanding or a lack of understanding of the concept, further examples will not change its meaning.

Where a person is still forming a concept, for example a child trying to understand the difference between a paddock of wheat and a paddock of crop, a number of examples may be necessary to build up the concept of 'crop' as a superordinate term which includes wheat and so on. But once the term 'crop' is properly understood, it will come as no surprise to learn that you can have a crop of rice, or maize, or barley. Even though it may then be thought that 'crop' refers only to cereals grown in paddocks, and not known that there can be a crop of tomatoes in a garden, the term for that person has one meaning at that time. It means more than a paddock full of wheat plants because it can also refer to a paddock full of barley plants, but it also has a meaning which is larger than wheat plus barley, for it will be implicitly understood by then that it is *logically* possible to discover more instances of the same concept, even though they differ in some respects from instances previously recognised.

The way in which a person often learns a concept, by eventually abstracting from a lot of examples what it is that they have in common, is directly analogous to the way science develops its concepts. If swans are assumed to be, by definition, a "species of large, long-necked, white aquatic bird" (which, to my surprise, is a quotation from the *Penguin English Dictionary*, 1965) then when somebody discovers a creature which seems to be identical in all respects expect for colour, it may be prudent to amend the definition of 'swan'. When that occurs, colour becomes a property (quality which varies) of swans instead of an essential element in the meaning of 'swan'. 'Swan' means "species of large, long-necked, aquatic bird" not "black-swans plus white-swans", for it is now logically possible to discover or breed a pink swan. White swans are a sub-class of swans but white-swan is not a sub-concept of swan, for the meaning of 'swan' is now independent of the property of colour or of the particular value white.

Similarly 'furniture' will remain even if chairs become obsolete; 'crop' will survive even if wheat becomes extinct; 'fruit' will still appear in the dictionary even if all the plum trees die. In what sense, then, could Rosenberg speak of "education, income, occupation, family, etc." being sub-concepts which enter into the global concept of social class?

How does this analysis stand up in relation to the many factorial studies that have been made to determine the structure of intelligence, or anxiety, or authoritarianism? And how can Dreeben speak of "a cluster of meanings" and "several referents" for a term?

It is not valid to argue that even the word 'swan' means several things at once - *large, long-necked, aquatic, bird* - for these are elements in a single definition, and there is no ambiguity about how to operationalise the concept of swan, which simply means, in this case, that you know one when you see it. The word 'swan' has one meaning, and this would not be negated even if it took 100 words to define it, and even if there were 15 different colours of swans. It is contrary to any normal (and scientific) usage of human language to allow that a term, representing a concept, can have multiple meanings. If the term has multiple meanings then each of these meanings must be the subject of separate studies - that is, they are *different* concepts, as different as if they were represented by different terms.

The same linguistic criteria must apply to a term used for a concept in the social sciences. It must have a single conceptual definition which at any point in time is as unambiguous as the definition of 'swan'. This does not mean that the concept will be as easy to operationalise, or that the concept is fixed in meaning for all time. It does mean that every observation of a concept (every item in a test purporting to measure a variable) must represent the concept of which it is a particular instance. It is not sufficient to say that an item represents one of the sub-concepts and therefore the concept itself.

Why not? Would it not be valid to determine the quantity (tonnes or boxes) of fruit produced in a district by adding together the quantity of each kind of fruit produced? Yes. But there is an important difference: it is the difference between a property concept and a thing concept. The variable or property concept here is quantity. The thing is fruit.

Even though 'fruit' was used earlier as an example of a term which represents a concept, and therefore means more than the sum of its particular instances, it is valid to describe a particular finite domain (e.g. the fruit produced in a particular district) as being the sum of its parts, in which case it is also valid to apply a relevant property concept not only to the whole domain but also to its parts individually or in any desired combination.

For example, the whole crop of fruit and each species can be described in terms of quantity. A single meaning of 'quantity' would have to be indicated, for example, weight, number of cases, or cash value. It is improbable that a single statement regarding the quantity of fruit could simultaneously mean weight, number of cases, and cash value. Either 'quantity' has to be defined, or would be understood, for that occasion, as meaning one of its possible synonyms, or else separate statements can be made about weight, number of cases, and cash value, in which case the term 'quantity' is redundant.

The point is, then, that although in general all concept terms mean more than the sum of their known or listed instances, in the research context a distinction has to be made between:

1. *Thing terms*, which refer in a particular research context to a specifically designated finite domain which may be investigated with regard to its various parts; and

2. *Property terms*, which refer to qualities or variables which cannot be conceived of as things or phenomena consisting of parts, components, or sub-concepts.

All of this discussion has important implications for research methodology. It does not mean that previous researchers have all wasted their time, but keeping these points clear may have prevented some erroneous interpretations, and it certainly can help in the process of formulating new concepts for the research literature. Some of the practical implications will now be examined using Dreeben's "independence", mentioned at the beginning of this chapter, as a focusing example.

If independence is to serve as a theoretical construct then the first point to clarify is whether it can be meaningfully regarded as a property/quality/variable of a person, and in particular, whether it is really a variable itself as distinct from a value or category on some other variable. For example, 'tall' is a collective adjective applied to the loosely defined upper values on the property height, but it would seem to make sense to regard independence as a variable in its own right, such that persons may conceivably be rated on various points from high to low on an independence scale.

The next question, having accepted intuitively that people can be more or less independent, is to be definite in regard to what this means. Dreeben (1968, p.66) considered that the meaning was not unequivocal, which was an excusable starting point, but he then nominated a "cluster of meanings" which did not all serve the same logical function. "Doing things on one's own" is not a meaning, though it could be a symptom, of independence. It could, however, also be a symptom of loneliness, social incompetence, fear, and so on. "Being self-reliant" and "acting self-sufficiently" are somewhat synonymous with each other and with "behaving independently", so these could be used as elements in a conceptual definition - not a cluster of meanings but a single meaning. "Accepting personal responsibility" and "handling tasks /without/ the help of others" are simply operational instances of *not being dependent on other people.*

It must be clearly understood, then, that each item in a measuring instrument must represent the variable intended to be measured. If it does, then there is no need to say that an item is measuring something else (for example, one of several meanings). If an item in fact measures only something else, then it belongs in another instrument. This must surely be irrefutable. Then why is it necessary to write long tests and to make many different observations in order to measure the so-called complex constructs? *Because the domain or referent or thing to which the property pertains consists of many parts and sub-parts, and no particular one of these can be assumed to represent the whole domain.*

If it can be understood, and accepted, that 'independence' has a single meaning which can be conveyed by a combination or cluster of synonyms and near synonyms, such as "acting self-sufficiently, being self-reliant, not relying on others", it should not be difficult to realise that this sort of behaviour, this quality or property of human behaviour, may be manifested in many different situations. Furthermore, it is quite conceivable that a person may exhibit a greater degree of independence in one kind of situation than in another, and perhaps even in regard to particular facets of behaviour within each situation. The task of the researcher is thus to analyse, into highly specific segments, the domain in which it makes sense to speak of independence occurring. Items are then devised to measure independence in a sufficiently large sample of these segments to provide a stable global score.

If the researcher is interested in exploring further the ways in which independence manifests itself among a certain population of persons, then a large number of items, all of them carefully devised to represent the concept of independence, may be administered with a view to investigating various statistical properties of the responses. A statistical process commonly reported in the research literature is factor analysis. It is often assumed that the purpose of factor analysis is to reveal the factorial structure of the concept in respect of which the items were written, to crack the code, or discover what sub-concepts or components the variable really consists of.

But let us look more closely at the sorts of information which can be gleaned from the products of factor analysis. Adhering to the fundamental premise that one property term represents one property then statistically derived factors may be interpreted as follows.

1. If the researcher has good reason to believe that all of his items represent the concept intended to be measured, then factors that emerge are likely to be descriptive of different parts of the domain, referent or thing - different areas of behaviour. As stated previously, it is quite conceivable that people will vary in their level of independence from one kind of situation to another. Certain sets of items, representing independence in particular parts of the domain, therefore tend to reveal higher intercorrelations and thus to emerge as significant factors. This sort of interpretation does not affect one's *concept* of independence. It probably extends one's *knowledge* about independence and about the domain of behaviour in which independence has been operationalised.

   Where the domain falls clearly into distinct areas in this way then separate scores on the variable may be calculated for each area and/or for the total domain depending on the purpose of the particular study. The scores are additive in a similar sense to that in which weight of apples plus weight of oranges equals weight of fruit, subject to the fact that scores on tests may have different mathematical or statistical properties that need to be taken into account. However, the researcher would have

to consider how useful, for descriptive or theoretical purposes, it would be to say that a person had a certain score on an independence scale if in fact the sub-scores on independence (from different aspects of human activity) were virtually unrelated.

2. If a certain item in the analysis does not correlate significantly with the instrument as a whole or with any worthwhile factor or sub-set of items, the researcher may make one of two judgements: either the item does not correspond with the conceptual meaning of independence (now that he comes to think about it again); or else he can stand by his original judgement on the first point but concede that the item relates to a behavioural situation that operates independently of the other segments of behaviour sampled in the instrument. If he has some particular reason for wanting to know the extent to which subjects exhibit independence in the sub-situation represented by the item then it can remain in the instrument. If his real interest is in obtaining general, global scores which discriminate among persons on the basis of their level of independence then the item may be discarded.

3. If it should occur that item intercorrelations and factor analysis produce no single factor but only distinct groups of items that seem to be united not by any recognisable objective classification of the domain (for example, areas of behaviour or activity) but rather by certain *qualities* which would tempt some observers to suggest that they represent sub-concepts of the variable being investigated (for example, independence), then the truth of the matter probably would be that there is no evidence of a single property being measured by all the items. If that is the case then there is no justification for using a single term to describe the properties that are being measured. Neither could the scores obtained from the sub-sets of items be regarded as adequate measures of whatever they appear to be measuring, for the items would not have been written for those purposes and they would only partially sample the behavioural segments which would be included in instruments deliberately written to measure those variables. The results of the exercise would be

that the intended, hypothesised construct or property is either not relevant to the domain in which the measurement was attempted, or else was poorly operationalised by the items in the particular instrument; also, that there are other variables tentatively indicated in the analysis and these may be worthy of further investigation.

4. Somebody may notice that all the items written to measure the property P in sub-domain d1 appear to be *qualitatively* different from those written to measure P in d2. Are these different qualities not in an important sense sub-concepts of P? This is a futile question. The question to ask is: Is it still P that is being measured in both d1 and d2? If all the evidence confirms that this is so, then the project may continue as a study of the concept P. If not, then something is wrong - if the items in d1 and d2 are not operationalisations of the conceptual definition of P, this deficiency is not remedied by calling them sub-concepts of P. They may look similar to P, but if they are not P, then they are in the wrong instrument.

A probable source of confusion in this area is the fact that in real life there is overlap between the manifestations or representations of behavioural concepts. As noted earlier, "doing things on one's own" may be a symptom of independence, but it may also be indicative of social incompatibility, which would not be part of the meaning of 'independence'. A person may laugh in the process of being amused, happy, exhilarated, cruel, sardonic, or hysterical. It is thus quite possible for an item, or an observed behaviour, to be valid on two different concepts, though of course it is more efficient if unique items can be devised.

In the factor analysis situation, therefore, in which data from an instrument designed to measure P produce one or more additional factors (F) that look somewhat related to P, this is not to be taken as evidence that P *consists of* other concepts. Two distinct questions are admissible. The first is 'do all items in the instrument satisfactorily fulfil their intended function of measuring P, and if not, which items fail and why do they fail?'. The second, which needs to arise only if the instrument as a measure of P appears quite inadequate, is 'what is it measuring instead of P?', and an inspection of the items which weight significantly on F

may give a clue as to where the *meaning* of P is ambiguous or where the *operationalisation* may have gone wrong. A decision should be made, if the evidence seems to require it, to start again and measure two separate properties instead of the one, but in this case there would be, as just stated, two separate properties, each with its own meaning and appropriate manifestations, and the original supposedly single property would be modified or abandoned.

# CHAPTER IV
## SOME CONCEPTUAL CASE STUDIES

It is desirable now to test the ideas presented in the previous chapters against a number of concepts from the literature and from everyday experience. Specifically, does it always make sense to construe supposedly multi-faceted, global, complex or composite concepts in terms of *single properties* of *complex things?*

We have already seen that it is possible and advantageous to regard independence as a single concept that can be recognised in a variety of human situations. The situations, or the domain of behaviour, may be sub-classified into as many parts and facets as the researcher may wish, subject only to the criterion that the *property* (independence) is potentially recognisable in such activities or situations. This, after all, is how item writers are able to write many items for an instrument to measure a particular construct - they consider how it would be that the construct would be manifested in situations 1, 2, ..., n, n being the possible number of different items.

In Rosenberg's critically important statement on component variables and their role in the pursuit of understanding of research data it appears that the vital distinction had not been made between *de facto* and *conceptual* relationships between variables. This weakness has not generally affected the validity of the procedures illustrated by Rosenberg in the analysis of data, but the incorrect use of terms must eventually lead to confusion.

To illustrate the value of introducing a component variable for the purpose of elaborating an initial finding Rosenberg referred to a study of social class and child-rearing values conducted by Pearlin and Kohn. It was found that:

> ...the working class was more likely to stress obedience, the middle class self-control...The consistency of these results in two quite different social environments [America and Italy] is a fascinating finding and suggests that some element of social class is of such decisive significance that it overcomes cultural differences between these two societies. But what is this element of class?...Does money enter into it, or education, or type of work, or social prestige, or aspiration level, or

> what? If we can say *what it is* about social class which gives rise to these differences, then our understanding will be considerably enhanced. The investigators focused on the occupational *activities* in which the classes were characteristically engaged. The manual worker, they reasoned, tends to be more under the supervision of others... (Rosenberg, 1968, p.42)

There would seem to be no methodological advantage here in assuming that the relationship originally discovered should be accounted for by a sub-concept or component variable rather than by another variable which is *conceptually unrelated* to social class. For one thing, to focus only on what Rosenberg would call component variables might mean that some important possibilities are overlooked. All that is needed to explain the relationship, given that social class itself does not seem an adequate explanatory concept, is to search among the variables that happen, in practice, to be correlated with social class.

Why should social class be regarded as more global than some of its components? Granted that there is a degree of aura about the concept in the literature of sociology, and that numbers of studies have used it as a means of classifying people and found that many other variables are correlated with it, it is important to remember that it is normally operationalised in quite specific terms such as occupational status - in the present example there are simply *manual workers* and *others*. It is illicit logic to assume that the concept being measured is somehow much greater in generality than its operational definition allows. The conceptual definition must, when using a term in theoretical statements, be reasonably compatible with the data which represent it.

A concept cannot by itself logically entail another concept. Only propositions can entail other propositions. Then, either social class is synonymous with occupational activities, education, income, and aspiration level, in which case to measure one is to measure all, or they are not synonymous, and simply on account of knowledge (factual, not purely logical) about these variables it seems reasonable to look for another concept to provide an explanation for the relationship. There is no justification for asserting that occupational status (being a possibly synonym for social class) conceptually entails levels of education or occupational activities. Rather, they are other variables which, taking into account the total patterns of society with which we are familiar, are likely to be related to it.

The importance of pursuing this argument, perhaps to the point of tedium, derives from the importance which Rosenberg placed on researchers understanding the position which he held. Some further quotations from Rosenberg (1968) will illustrate this:

> ...one of the most powerful variables in sociological analysis is the concept of social class...The power of social class as a determinant of attitudes and behavior is one of the best documented of sociological findings. Social class, however, consists of a number of component elements. (p.47)

> Indeed, if a variable is a very broad one, then it may achieve deceptive theoretical power, in the sense that if some of its components have little bearing on the dependent variable, other components have a great bearing. But such power, while useful for prediction, is not really an aid to understanding. The factor in class which influences one dependent variable may not be the same factor that influences another dependent variable. Unless one takes account of component or specifying variables, one is in danger of attributing excessive importance to a variable simply because it is broad and encompassing.
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> What is true of social class is equally true of many other sociological variables. Age reflects a social status,...a state of health, a level of energy and alertness, a characteristic relationship to work, etc. Each of these factors may have a different effect upon different dependent variables, even though "age" is related to each. In each case the "same" independent variable is not necessarily the same. (p.48)

In respect of other examples of global concepts such as race, sex, and nationality, it is often necessary to consider:

> ...the specification of the crucial component...In effect, the relationship is based on the fact that the global concept "stands for" the specific element. (p.50)

A central proposition developed in the previous chapter is that although *things* can be compartmentalised into bits and pieces it does not make sense to speak of a *property* consisting of sub-properties, and therefore neither is it meaningful to speak of property concepts having components, elements, sub-concepts or factors. Colour is sometimes proposed as being an obvious example of a concept having numerous sub-concepts. This argument is supported by those who refer to "learning the concept of red" as an example of the way children abstract the meanings of words from repeated perceptual experiences of the same phenomenon. While it is reasonable to use the term 'concept' for that which is achieved when a child learns the meaning of a primitive term such as 'red', this does not oblige researchers to regard

red as a component sub-concept of the property colour. Colour is the property; red is one of the value or category terms used to indicate the ways in which colour varies.

In a study attempting to determine the relationship between, say, redness of hair and strength of biceps it may appear that redness, being a variable, is a property concept in its own right. But the word 'redness' is here used in place of the word 'colour', the hypothesis, more correctly stated, being that persons whose hair is the colour red have stronger biceps than persons whose hair is the colour not-red. With some properties it is possible to refer colloquially to certain values (typically the upper or greater values) by using a term similar to the name of the property - intelligence/intelligent; anxiety/anxious - but for more precise description or for expressing hypotheses it is probable that the name of the property will not resemble the terms required to express its particular values.

To pursue the example of colour a little further, a particular table may be seen as consisting of several components - top, legs, cupboards, drawers. Recall that it is reasonable to say that a particular table consists of those parts, regardless of the fact that the concept of table is independent of the concepts of legs and drawers for not only may a table not have drawers, but drawers appear in many places besides tables. Table, on this occasion being a *thing* as distinct from a concept or abstraction, may be described in terms of various properties (variables) such as height, weight, age, colour and money value. With regard to colour it may be asserted that in general the table is brown. This is a global assessment, a composite of the fact that the top is light brown, the legs dark brown, and the drawers and cupboards a yellow brown. Thus each part of the table has its own value on the property colour, but if the values are similar it is possible to generalise with a single value for the whole table. If the table was a combination of contrasting colours this would not shatter the concept of colour, but merely make the description more complex - different values would pertain to different parts of the table.

A different analogy in psychological terms is the person who with regard to ability or achievement or intelligence may be high on verbal activities, low on mathematical and average on spatial. The property term (for example, 'ability') has a single meaning, but a person may be judged as having a certain measure of it in all aspects of behaviour or else differential measures in the respective categories of activity.

Returning to Rosenberg, one important reason why certain variables appear to be more global is that they are easier to measure and have therefore attracted greater attention and accumulated a more impressive range of known and documented predictive relationships with other variables. The advantage of collecting data on age is that they are easy to collect. There is no need to regard it as conceptually broad and encompassing. If a relationship with age is found, but is not intellectually satisfying as an explanation, then further investigation may be appropriate with another variable that is correlated with age but logically more akin to the dependent variable. If state of health, for example, was as easy to measure as age, there may be just as good a reason for including this variable, almost as a matter of course, in many research studies. The same applies to social class and its supposed elements. It is easier to observe whether a person is a manual worker or a white collar worker, or whatever surrogate measure is chosen to represent social class, than to find out in unambiguous terms how much education a person has had. It would possibly facilitate clearer thinking if the term 'social class' were dropped from the vocabulary of social science. 'Age' is defined and operationalised simply and unambiguously as "the number of years since birth". There is nothing complex about it. It may indeed reflect other variables, because empirically they are found to be related, but let these not be mistakenly regarded as components of the single concept age.

The methodological issues in this discussion concern the logical and conceptual criteria for admitting a term to the vocabulary of social science. Contiguity in time or space, or even high statistical correlations, are not sufficient criteria for placing a set of phenomena under a single conceptual label. There must be a unifying attribute such that every instance reflects the conceptual meaning of the term; and as it is nonsensical to suppose that a term can have more than one meaning, the corollary is that it is not necessary to become, with Rosenberg, perplexed about the "problems" of "global or multifaceted concepts".

Rosenberg's account of authoritarianism presented another challenge to this position:

> Assume that we find that authoritarian personalities are more likely than democratic personalities to hold the view that the common man is so stupid and irrational that democracy is not a viable system. But authoritarianism is a complex syndrome consisting of a variety of symptoms: extrapunitiveness, a hierarchical view of the world, parental idealization, rigidity of thought, excessive impulse control, hostility, contempt for human nature, etc. While these characteristics hang together, and the total syndrome is associated with the dependent variable, not all the components enter into the causal relationship equally. This is one of the problems with many global or multifaceted concepts: so many things are contained within them that one does not know which one is most crucially implicated in the observed result.
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> Let us say that we then control on "faith in human nature" and find that the relationship vanishes. To know that faith in people is the decisive factor is to obtain a more exact understanding of what is going on. The fact that an authoritarian is dubious about the political rationality of the common man is not directly due to the fact that he idealizes his parents, or has excessive regard for authority, or has excessive impulse control, etc.; it is most directly due to his low regard for human nature. If one can specify that faith in human nature is crucial to belief in political rationality, then one's understanding is considerably enhanced. If, on the other hand, one wished to explain the relationship between authoritarianism and absence of guilt feelings, then faith in human nature might have nothing to do with it; a resistance to introspection and absence of intrapunitiveness might be the decisive elements. (Rosenberg, 1968, p.50)

If authoritarianism is to survive as a property which can be employed to describe persons, then an instrument to measure this property must consist of specified observations *every one* of which represents the meaning of 'authoritarianism'. If any item does not allow a judgement to be made as to whether authoritarianism is being manifested - at least to the extent that either a negative response means definitely not and a positive response means possibly so, or a negative response means possibly not and a positive response means definitely so - then the item does not belong in an instrument purporting to measure authoritarianism. Then what is the nature of the "symptoms" of authoritarianism, which allegedly can vary at least to some extent independently? If these really are *symptoms* of authoritarianism, then we are looking at a "global" variable quite different in kind from the "global" variables of age, sex and social class, for their "components" were found to be logically separate properties which had been found empirically to be correlated in the real world. Here we have *a* property, authoritarianism, with various manifestations.

Rosenberg states that authoritarianism is a complex syndrome consisting of a number of symptoms. Nowhere does he mention the meaning of 'authoritarianism' which presumably would be the principle that unites this heterogeneous collection. Granting for a moment that there is (though we are not told about it) a unifying principle to define 'authoritarianism', the only logically defensible position is to regard the symptoms as sub-scales which relate not to different meanings of authoritarianism but to different parts of the personality or areas of personal behaviour. Personality is the thing; authoritarianism is the property; things can have many parts but it does not make sense to speak of a property or quality having parts.

It is redundant to refer to the meaning of a term as multifaceted, for every concept is an abstract from a universe of instances which may be invoked to operationalise it. The term 'authoritarianism' has, we presume, a meaning - if it does not have one it should not be employed in serious communication. It is applied to a property of human personalities. Personalities reveal themselves in many different classes of behaviour, and it is apparently meaningful for some of these classes to be described with regard to the quality of authoritarianism. A person who is highly authoritarian is one who exhibits the property of authoritarianism in a large proportion of the areas of behaviour sampled in a measure of authoritarianism. The *symptoms* of authoritarianism are the manifestations which appear in different behavioural contexts. Thus, although Rosenberg lists several symptoms such as extrapunitiveness, a hierarchical view of the world, parental idealisation, rigidity of thought, excessive impulse control, contempt for human nature, and so on, it should be equally meaningful to speak of the *degree of authoritarianism* in *each* of the following aspects of personality or areas of behaviour:

attitude to punishment;
view of the world;
relationship to parents;
thought processes;
expression of impulses;
opinion of human nature;
and so on.

There will also be sound logical reasons for hypothesising that authoritarianism in items concerned with opinion of human nature will be predictive of one's opinion on the viability of democracy.

A final example from Rosenberg, though several others could be considered, concerned:

> ...the case in which one begins with a relationship between a component variable and a dependent variable, and then controls on the global concept of which the component is a part. (p.51)
>
> ...assume we were to find that people who favor Medicare are more likely to vote Democratic. We might reason that this result is due in part to the view that the Democratic Party favored Medicare. In fact, however, approval of Medicare may be a specific expression of a broader attitude of liberalism. If the relationship between attitudes toward Medicare and toward the Democratic Party vanished when liberalism was controlled, we would know that attitudes towards Medicare exercised no influence on voting independent of the broader attitude of liberalism of which it is a part. (p.52)

The procedural logic is not at fault. The only reason for quoting this example is to point out that if approval of Medicare is a specific expression of liberalism, then it is the *same* liberalism, not a broader (and presumably more "global") attitude. What is happening here is that approval of Medicare is regarded as a manifestation of liberal attitude towards Medicare. 'Liberalism' means the same when applied to Medicare as to other social phenomena. Liberalism, in other words, is liberalism towards social phenomena, and it is social phenomena (the domain; the thing) which is broader than Medicare. In a sense, of course, it is admissible to say that therefore liberalism is broader than approval of Medicare, but it must be understood that the concept of liberalism (the property) is the same (broad-mindedness, tolerance, progressive outlook) in both contexts.

This chapter has tested the principles enunciated in the first three chapters against a limited number of concepts in the research literature. Many other examples could be analysed, but it will serve our purpose to proceed now to a consideration of the concept of open education.

# PART 2

# OPEN EDUCATION

## INTRODUCTION

An important function of research is to facilitate clarity of thought and to seek truth in fields where traditions, literature and a network of folk wisdom already exist. This is distinct from the realm of research that engages the frontiers of knowledge that are untainted by common men, where scientists can pursue concepts and relationships about which ordinary mortals have no awareness, let alone opinions.

A development in education which has, in spite of its relatively recent emergence, already accumulated an extensive literature, is open education. Institutions are vying to publish the latest bibliography on open education, and researchers are stressing the importance of conducting serious evaluations before whole systems throw themselves into commitments that may undo some of the valuable qualities of the traditional forms of schooling.

Part 2 of the present study is a report of an attempt to grasp the concept of open education in a way that permits it to be employed in research hypotheses. The first stage is an inductive process in which the meaning of the term 'open education' is derived from the literature by a process analogous to drawing a smoothed curve of best fit over a series of points. It is essential to do this if research findings on open education are to be seen to have any relevance among educationists who already use the term.

The second stage is concerned with discovering or inventing appropriate ways to measure openness of education. This process is both deductive and analytical. Deductive, because every item in an instrument must be derived from and be consistent with the accepted meaning of 'open' or 'openness'; analytical, because education or classroom practices must be examined to see what kinds of items can be written to measure the property of openness.

The following chapters will elaborate these processes.

# CHAPTER V

## A TERM IN SEARCH OF A MEANING

A major premise of this exercise is that there are two phenomena which, though they may be related empirically, are conceptually distinct. One is the existence of school buildings designed on an *open plan* of some kind. The other is *open education*, and it is not satisfactory to say simply that open education is that which happens in open plan schools. Open plan schools can be described and classified in relatively concrete terms, subject to the usual problems of categorisation which arise due to the existence of mixed and borderline cases. The meaning of 'open education' is much more difficult to discover.

'Open education' has become topical in educational literature and in conferences, and perhaps even more importantly in state education departments, where millions of dollars are being spent on school buildings designed according to some kind of open plan. It became rather urgent to discover whether there were good educational reasons for building open plan schools. Does this kind of building automatically generate open education? But what is open education anyway? Do we really want open education? Are there other reasons for building open plan schools, apart from joining a fashionable trend? Finally, might open education be something that is of importance to educationists, to society, regardless of its association or lack of association with open plan buildings?

The Australian Open Area Schools Project was designed and launched for the purpose of examining questions such as these. It would have been convenient if a ready made, acceptably validated instrument had been available to assist in the measurement of openness in Australian schools. But it would have been necessary to ensure not only that such an instrument was suitable for Australian conditions but also that it represented an adequately conceptualised meaning of 'openness'.

The following selected sample of descriptive writings may be regarded as indicative of the material that was available at the beginning of the present study. In addition, the next chapter examines the question of how researchers have been operationally defining 'open education' for the purposes of empirical study.

Perhaps the most widely quoted writer on this subject is Barth, who in numerous papers and a book disseminated a set of assumptions which he considered were the guiding principles of open education. Although Barth's account was sympathetic he pointed to the need for careful consideration of possible contradictions and to a lack of rationale for some of the assumptions. He concluded his account of the assumptions with a statement that was the nearest he came to a definition:

> What is open education? Why does this term best represent the foregoing assumptions? Open education is a way of thinking about children, about learning, and about knowledge. It is characterized by openness: doors are ajar, and children come and go; classrooms are open, and children bring objects of interest in and take objects of interest out; space is fluid, not preempted by desks and chairs organized in rows or in any permanent way; a variety of spaces are filled with a variety of materials; children move openly from place to place, from activity to activity. Time is open, to permit and release rather than constrain or prescribe. The curriculum is open to choices by adults and children as a function of the interests of children...Perhaps most importantly, open education is characterized by an openness of self on the part of children and adults. Persons are openly sensitive to and supportive of other persons, not closed off by anxiety and threat. Feelings are exposed and respected. Teachers are open to the possibilities inherent in children; children are open to the possibilities inherent in other children, in materials, and in themselves. In short, open education implies an environment in which the possibilities for exploration and learning of self and the world are unobstructed. (Barth, 1972, p.55-56)

The above list of open characteristics provided Barth with a good enough reason for labelling the scene as a whole with the term 'open', but there is no clear definition of the term as it is applied to all of these characteristics together. It seems that although a term has been found which immediately appeals as appropriate to the situation, on closer inspection there remains a need to define 'openness' *of education* to indicate how it is that all the characteristics are in fact characteristic of that phenomenon or property. For example, what is the meaning of 'open' such that when applied to education or classrooms or teaching practices it entails, or is operationalised by the fact that, "a variety of spaces are filled with a variety of materials"? Or, apart from the knowledge that, even with a tinge of word play, nearly all aspects of these classrooms can be described as open, what is the educational openness that is common to

all these symptoms? Barth stated that open education is "a way of thinking" about children, learning and knowledge, but failed to define the unifying principle, or what that way is.

Doors, classrooms, children, space, furniture, materials, time, curriculum and teachers are components of the classroom, and the openness that Barth recognised in these components *means* something different each time. A door being open means that people can walk through it, but this meaning hardly applies to time, or to persons. If follows that 'openness of education' is not defined by summing the meanings implied by Barth. Strictly speaking it is little more than coincidental that so many characteristics were able, in their own right, to be labelled 'open'. What is needed now is a definition of 'openness' as it applies to education, and then to see whether that meaning still makes sense when applied to the individual components of education.

Rathbone concluded an article devoted mainly to a descriptive analysis of "the open education classroom" with a claim that more was required than a recognition of the various parts:

> Within the open education classroom, surely other organizational elements exist; and it would certainly be possible, and even useful, to analyse them in the manner employed here. Yet perhaps more important at this juncture than describing an additional element is recognizing the interlocking, integrated nature of those features already specified; for, clearly, none exists as a distinctly independent entity, but rather each operates in collaboration with the others towards a set of common goals. Their common characteristics derive from a commonly held core of beliefs - an integral and unifying philosophy of what schools are for and what learning is like. Any attempt to describe these features separately must rightfully end with a reminder of this underlying unity. (Rathbone, 1972, p.536)

Nevertheless, all that he offered in the single paragraph relating to a definition was the following:

> Most discussion of open education - published and otherwise - has been characterized by a general vagueness of definition. Proponents speak of teaching "this way" or make reference to a nebulous "it" which "got started" in certain primary schools in England sometime after the war. Regrettably, few proponents or critics have been willing to take a hard definitional stand on a number of important issues, with the result that much debate has been cast in the sort of rhetoric which often adheres to libertarian movements, a rhetoric that seeks to persuade and convince, not simply to describe. The outcome has been confusion, not clarification; as a result, all too many come to espouse or reject open education solely on the basis of the language in which it has been presented. (p.537)

It is surprising that Rathbone made no attempt to remedy this situation.

Kohlberg and Mayer associated the open school with free school and de-school movements, all of which are seen as examples of the romantic ideology which currently is related to increased adult respect for the rights of children. They contrasted these with the progressive ideology, which they associated with both Dewey and Piaget, which espouses the developmental concept as the key to its selection of goals and means in education:

> For the romantic, liberty means non-interference. For the liberal /progressive/, the principle of respect for liberty is itself defined as a moral aim of education. Not only are the rights of the child to be respected by the teacher, but the child's development is to be stimulated so that he may come to respect and defend his own rights and the rights of others. (Kohlberg and Mayer, 1972, p.473)

It must be acknowledged that there are both writers and practitioners who have allowed open education to be typified as romantic in the vein described by Kohlberg and Mayer, yet there are many others for whom a less extreme position is identified as 'open', a position closer to what has been called 'progressivism' in the passage just quoted.

Resnick described the behaviour of the teacher in "an informal, or open classroom":

> The school was an extremely informal one: even in the basic skill areas of mathematics and reading there were no regularly assigned lessons or scheduled activities...Thus, the school provided an excellent laboratory in which to study the characteristics of teacher behaviour in an individualized education system where no formal statement of objectives, no formal evaluation and few programmed materials were used. (1972*a*, p.63)

Here we have 'open' being equated with 'informal' and with 'individualized', though one gains the impression that all three terms are used somewhat casually. However, the same author in another paper (Resnick, 1972*b*), having made "a close reading of the educational 'protest' literature", found out certain things about open education. Viewed from a certain perspective:

> ...it becomes clear that the heart of the open education challenge lies in the vision of an open society rather than in the organization of an informal classroom, or even a "school without walls". An open society requires open access to knowledge for all individuals at any stage of life. It also requires extensive degrees of self-determination with respect to what is learned, when it is learned, and how.(p.1)

> By using learner control as the defining criterion, I have tried to free the conception of open education from any particular set of current educational practices and to focus attention on a central social concern: increasing the degree of control the individual exercises over the shape of his own life. (p.22)

It is possible that "the vision of an open society" comes close to the ideological position of many who would claim or seem to be open educators. It is certainly commendable that an attempt has been made to focus on a central issue. What is less certain is whether the author was actually concerned to discover the heart of open education or rather to use this term to introduce a slightly different theme: the degree of control the individual exercises over the shape of his own life. Although this theme is an important strand in the thinking about open education, it is probable that 'openness' must be operationalised in other (additional) terms where the primary school is concerned.

Westbury (1973) made a determined attempt to interpret the classroom, whether traditional or open, in terms of "the tasks, structures and resources that define that social setting":

> ...proposals for change in classroom behaviors that do not address the issue of tasks and resources do not show how change in teaching real groups of students can be affected and secondly (contrary-wise), changes in teaching technologies *are* possible (at least potentially) when resources to permit that change are made available. The vehicle for both of these discussions will be the literature of "open" education, the reforming ideology and practices that Americans have come to associate with English infant and junior schools. (p.109)

Westbury pursued the implications of the assumptions and stipulations of open education as listed by writers such as Barth and Rathbone. In working them towards the concrete issues of tasks and resources he came to the conclusion that:

> ...the open classroom can only be made to work if devices of this kind (to facilitate materials-induced instruction) become the primary instruments of routine explicit instruction in those classrooms, thus leaving the teacher free to address the demands of classroom management and non-routine instruction. I am arguing, in other words, that the open classroom can only be regarded as a real and plausible alternative form of schooling if the teacher can be relieved, to a substantial extent, from traditional responsibility for mastery and task attention...the conventional American literature advocating open education gives little attention to these issues and, by this omission, gives a false impression of the issues and problems in open teaching. (p.115)

Westbury saw the work of educators such as Zoltan Dienes as being "the *real* literature of open education, and the issues which this literature raises are the real issues in open education". This assessment strikes a responsive chord in the present writer who had developed a lasting respect for the work of Dienes long before ever hearing the term 'open education'. It is no accident that Barth (1972, p.9) was able to write with regard to North America:

> The history of open education in this country is a recent one. In 1961 William P. Hull traveled to England to observe the work of Z.P. Dienes. "Dienes said that I couldn't understand what he was talking about unless I saw it in operation. He was right." Hull was impressed with what Dienes was doing and with what he saw happening in a few British primary schools. As a result of his enthusiasm, visits by interested American educators to England increased remarkably...The educational practices observed in England have been labeled in various ways: "free day", "integrated day", "integrated curriculum", "child-centred classroom", "developmental classroom", "Leicestershire plan", and "Leicestershire method". The last two terms are identified with a particular county in England because it was in Leicestershire that Hull happened to have his first look at British primary schools. In this discussion I have chosen to use the more central term "open education".

It may have been equally to the point if Barth had observed that Dienes "happened" to be working in the county of Leicestershire, developing what Westbury called "the teaching of open mathematics" (Westbury, 1973, p.115). It is important to realise that Dienes' work was, and continues at the University of Sherbrooke, Canada, to be motivated by no romantic ideology or revolutionary politics, but rather by a profound understanding of the way children learn.

The interesting point of all this is that although in quite an important sense open education grew out of a *pedagogical* development, all sorts of ideologies have adopted the movement and taken credit for it, yet when you try to express what really must happen in the classroom to achieve any particular learning objectives, you come back to speaking of tasks and resources, which is where it began. The following passage which Westbury (1973, p.115) quoted from Dienes (*Mathematics in the Primary School*, 1966) seems to contain notions of freedom, children's rights, personal openness, and other elements of liberation or romanticism, yet Dienes would have seen it entirely as an outworking of sound learning theory:

> Let it be immediately understood that decentralization does not mean chaos; nor does it mean abrogation of the teacher's responsibility as regards the conduct of the class. The way this responsibility is discharged will, however, be different in a decentralized classroom from the way it is discharged in a centrally controlled one. The children must feel with certainty that the teacher is in charge of things, but at the same time he has arranged that information can reach children without his intervention. The children must also feel that they can check their own or each other's work in an independent manner, and they will consult the teacher if some problem arises which they are unable to solve by themselves.

Westbury discussed at length the relevance of Dienes' prescriptions to the goals of open education but expressed some pessimism as to whether areas other than mathematics had been sufficiently developed in an equivalent manner to solve the pedagogic problems of the open classroom.

Reschly and Sabers (1974) introduced a rather flamboyant article with:

> There is an incredible naivete regarding the similarities between progressive education and open education. Will open education make the same errors and suffer the same fate? (p.675)

They demonstrated their claim by reporting the results of administering to teachers a composite attitude scale consisting of the Kerlinger scale, which measures attitudes towards progressive and traditional practices, and a 40 item scale based on the measurable aspects of Barth's 29 assumptions of open education. It appeared that the two concepts were very similar, with open education being perhaps a more radical approach than progressivism. However, the problem of defining open education appeared not yet to be fully solved. After a long statement about the "limitless exciting and creative ways of looking at program effects" they pointed out that:

> The first step in effective evaluation would appear to be the assessment of degree of implementation. No researcher or program evaluator should attempt to generalize about the effects of open education unless the degree of implementation is systematically measured. (p.677)

They offered no formula on how to assess the degree of implementation, but "believed" it was possible to do it.

Nyquist (1971) in a well balanced article dealing with open education considered that:

> Respect for and trust in the child are perhaps the most basic principles. It is assumed that all children are motivated to learn and will learn if the emphasis is on learning, and not on teaching; on thinking, and not on memorizing; on freedom and responsibility, rather than on conformity and following directions. (p.6)

Although many other characteristics make up the total picture of open education, Nyquist tried to locate a unifying principle. But he mentioned *two* basic principles: "respect for" and "trust in" the child. Are these synonymous? If not, can one be shown to subsume the other? If not, can one be shown to be, after all, *the* basic principle of open education? Or, is there yet another principle that subsumes both of them? It is difficult to conceive of 'openness' meaning more than one thing, no matter how many other ideas may logically follow. Further, even if open educators do respect and trust children, to define them as open *educators* must surely require terms which have some specific relevance to the process of education. In any case 'respect' and 'trust' are terms, not principles, for principles need to be expressed as propositions.

Rogers (1972), in an article entitled "Open schools on the British model", after describing the scene in a particular primary school to give "something of the flavour of the good British primary school in action", continued:

> ...it is both like and unlike the dozens of informal schools I have visited in Britain and America, virtually all of which are distinguished more by their uniqueness and diversity than by their uniformity. Nevertheless, informal schools do have some broad qualities and concerns that distinguish them from formal or traditional schools, and it may be useful to list some of the most important at this point. (p.402)

This pattern is becoming familiar. There is always a list, and never a recognised centre. The only single feature that observers seem to be able to codify is that the schools are different from traditional schools. This is hardly a suitable basis for operationalising 'open education' whether for the purpose of conducting a school or for evaluating the phenomenon. Rogers spoke of schools being de-institutionalised; a broader interpretation of individualisation; less formal testing; school staff making more decisions; and, last:

> Teachers in such schools seem to accept fully the notion (so much the essence of Piaget) that children's learning proceeds from the concrete to the abstract, and that *premature* abstraction is one of the great weaknesses of the traditional school. Thus the emphasis on concrete materials, and encounters with real people and places whenever possible. (p.403)

Yet there was no conception, apparently, that one of these might explain the others, or that they might all be explained by a unifying principle which ought to be found to make sense of the whole business. Rogers said there was "an almost desperate plea for research - for evidence - among those who find these ideas appealing but lack the conviction of their British counterparts" (p.404), but if nobody can even hypothesise what is essential and what is incidental there are unlikely to be any useful conclusions from the research.

This catalogue could go on and on, with each author adding little to the meaning or definition of 'open education', and few even noticing that educational procedures, planning, training, debate and research would be helped by the discovery of what open education is really about. A few more examples will suffice to represent the literature that is available.

Bell (1975) referred to "the free form of teaching" in the open classroom, and continued:

> ...it has yet to be proved empirically that informal or open education produces better results..."How do we evaluate an informal approach to learning?" The question is being asked overseas...but /there are apparently/ no conclusive answers. To a large extent, it is a matter of subjective judgment, until more research is completed. (p.14)

Wilson (1972) used the term 'open' straight from the Concise Oxford Dictionary:

> ...in the sense of not being closed; of allowing entrance or access; unenclosed; unconfined; not exclusive or limited. (p.131)

Wilson was apparently undaunted by the fact that there were several distinct concepts in that short list. This was convenient for it allowed her "to describe the ways in which 'open' may be applied to education" (p.135) in a manner similar to the procedure followed by Barth and mentioned earlier in this chapter.

Hird (1972) commented as follows:

> As an educational movement open education has aroused enthusiastic support, some reservations, and some opposition. Although neither widely practised nor completely understood, open education is nevertheless being hotly discussed at the school and community level and at in-service programs at the inspectorate level.
>
> Too often, when attempting to examine or practise open education, we think in terms of absolutes. Open education is not synonymous with the educational conception that we associate with open spaces and complete freedom of choice by children. In essence, open learning is concerned with open-ended learning situations...that provide children with the opportunity for choice, for decision making, for learning the art of selecting from alternatives, for self direction and independent thinking rather than those experiences which control a child's thoughts and limit his educational experiences to the acquisition of facts and skills. (p.12)

One of the reasons why open education, as many people perceive it, will be difficult to evaluate is because it has become a movement, with all the attendant confusion of motives, values and extraneous paraphernalia. If the real thing would step forward then there may be some sense in attempting to evaluate it. It is to be wondered what is wrong, as Hird warned, with thinking in terms of absolutes. Problems do arise when the thinking concerns specifics such as freedom of choice, and the fallacy of the logical conclusion occurs when somebody says, and perhaps argues convincingly, that freedom of choice is a quality to be desired in a classroom, and then somebody else supposedly tests the theory by observing extreme cases of freedom and extreme cases of lack of freedom. But theoretical statements can be worded in such a way that if they are valid then the more absolutely the treatment is operationalised the better.

A feature in *Nation's Schools* (1971) made some surprising observations about open education:

> Based on an impressive body of research and theory on how children do - and do not - learn, the approach discards the usual elementary classroom set-up and the traditional role of teacher and student for a freer, more informal, and highly individualized learning experience. (p.47)

The research and theory was "notably the findings of Swiss psychologist Jean Piaget and recent child development research". The statement is surprising because so few commentators make such a direct reference to the importance of theory in the emergence of open education. Westbury, quoted earlier, was one of the few. The implications for research and evaluation are that if an open classroom is one which practices the learning theory of Piaget and Dienes, then evaluation should be in terms of testing hypotheses that arise directly from their theories. The tragedy is that so few teachers and so few writers even wonder whether there is a theory of learning behind what goes on in open classrooms, let alone try to put one into effect, that it would be farcical to evaluate their classroom in terms of testing a theory. Then what *can* be researched? This is to be considered in a later chapter.

Staples (1971) referred to the "open-space plan in education", though he said that "specific applications of this concept are varied and are known by many other names: the 'open school', the 'open classroom'" and so on:

> This concept is committed to the ideal of individualization of instruction...Of the two elements comprising the term "open-space", "open" is the more basic and significant concept. To be meaningful and to have integrity, "openness" must be characterized by approachability, relaxed and informal control, ease of communication, mutual supportiveness between teacher and students, and a stimulating learning environment...*The emphasis is on the child learning rather than on the teacher teaching.* (p.458)

In spite of the attempt to provide 'openness' with a meaning, there was no statement from Staples as to why 'openness' should be "characterized by" his particular list of properties and circumstances. What is there in common between "approachability" and a "stimulating learning environment"?

An enthusiastic statement was made by Hein (1973) in an article entitled "Piaget, Materials, and Open Education":

> Those of us who believe in open classrooms - places where children are free to explore the world and where there is enough of the world present to make the promise of freedom meaningful - support them for a variety of reasons. One is the simple humanitarian one: we approve of what happens when materials are available and children have a chance to use them. The quality of joy and excitement, of activity and satisfaction that exudes from an open classroom is simply a pleasure to observe...But there are other sound reasons why we support open classrooms. These have to do with what we know about child development: what children are like and how they learn. (p.7)

There followed an excellent lengthy exposition of the importance of "stuff" (materials) in the classroom, which is not only a necessary condition for achieving the educational goals but is also in an important sense a sufficient condition:

> Without the materials the children can't learn and the teacher can't teach, they can only both go through an elaborate ritual which leads to certification or failure. With the materials, both teaching and learning can happen and should be within the capabilities of most participants in this important life enterprise. (p.10)

It seems that in some respects Hein might have been near to the heart of 'openness' though an additional point needs to be made. If open education is a programme based on *what children are like and how they learn*, this should be an explanation for everything else, including the fact, if it is so, that children experience joy, excitement and satisfaction. If these are essential characteristics of open classrooms, and if there is a known basis for implementing the programme of the classroom, then one should explain the other.

Pilcher (1972) took a short cut and wrote about open education "as defined by the British Primary School model" (p.137). The theme of his article was the contrasts between American and British education systems which should inspire caution in "attempting to transplant open education full-grown into our public schools". This manner of reasoning immediately betrayed the fact that open education was conceived by the author in terms of its superficial daily occurrences rather than as an educational principle that could be applied to any system and any level of education. This conception was no secret, for Pilcher continued:

> One of the most distinctive features of open education is its grassroots nature. Its derivations come less from abstract theories than from the "muddling through" of countless classroom teachers striving to find a better way. Indeed, it can reasonably be argued that there was no such thing as a "philosophy" of open education until after the academicians created one to fit the practice. (p.138-9)

Henderson (1973) commented on the problems of validating open education:

> In efforts to justify open-education programs, relationships between science and philosophy often become confused. Some educational critics argue, for example, that open-classroom procedures are better articulated to scientific theories of child development...than are traditional programs; Piaget is especially credited with providing a major scientific basis for open education...A crucial point overlooked by these writers is that, in the instances they cite, psychological theories are used to generate educational practice and the worthiness of the practice is then supported by reference to its relationship to the theories. This kind of circular reasoning is not science ...Methods of science come into play only when procedures are instituted to demonstrate in a verifiable way that given practices, whatever their genesis, lead to predictable outcomes. (p.369)

An important distinction should be made here between, on the one hand, explaining why a programme was begun, and on the other hand, demonstrating that it was a wise decision. The further a programme departs from practices which are logically justified by an accepted theory, then the less point there is in invoking that theory as an explanation for what is happening; and, in all probability, the harder it will be to say what it is that is being evaluated. This appears to be the situation in the case of open education. There are some who are trying to relate to the theories of Piaget what *they* are doing, but this minority can hardly be regarded as representative, and any evaluation which they may carry out could hardly then be construed as an evaluation of everything that calls itself open education.

The reader could be excused for finding that the literature presents an unruly conglomeration of practices and theories that masquerade as a single movement. The only line of reasoning one can find to explain this situation is that traditionally the great majority of schools were thought to be eternally of the one kind, and now that this supposed homogeneity is broken it is somewhat natural to refer to all these other schools under a single term. This is in spite of the fact that many writers actually observe that the other schools are all different from each other.

If this is even partly true it presents difficulties for anybody attempting to define 'openness' let alone evaluate those school or classroom practices which represent the various points from high to low on an openness scale.

## CHAPTER VI

## PREVIOUS ATTEMPTS TO MEASURE OPENNESS

The previous chapter surveyed a sample of the descriptive literature pertaining to open education. This chapter is concerned with attempts to operationally define the concept of open education, either in the course of a study involving other variables or as a single exercise designed to result in the development of a measuring instrument.

Sewell and Dornseif (1974) wrote several pages explaining that openness was still not adequately defined and measured, and in regard to several reported studies:

> ...because 'openness' is typically unquantified, no generalizability can be derived from them. Hopefully, with the development of instruments to measure 'openness' or to establish the degree of difference between open and traditional programs, a major limitation of such studies will be eliminated. (p.6)

The authors referred to a study by Traub *et al.* (to be discussed later in this chapter) which they considered "quite likely represented the most careful and conscientious research to date in the area of open education". (p.7) One of the results of that study was a suggestion:

> ...that for certain students traditionally structured education yields more satisfactory outcomes. With such a possibility in view, the present study was undertaken. (p.8)

An open classroom project was commenced by Sewell and Dornseif under the acronym OSCAR - Open Space for Conceptualizing Attitudes and Responsibilities - and 140 children were allocated at random to each of OSCAR and a control (traditional) programme. Operational validity was described as follows:

> While no attempt was made during the course of the study to evaluate the relative 'openness' of the OSCAR program...the freedom afforded the OSCAR students was substantially greater than that accorded the control students. The OSCAR program was intended to incorporate as many of the general characteristics of "open education" as seemed appropriate to the needs and abilities of students, teachers, and parents. (p.10-11)

The rest of the paper was devoted to a detailed account of the procedures followed in measuring and analysing the outcomes - behavioural definitions, instrumentation, administration, multivariate analyses, tests of significance, and so on. It all seems rather incongruous with the meagre evidence provided for the existence of an independent variable.

The authors concluded after a second year (Dornseif, Gross and Sewell, 1974):

> The findings of the present study strongly support the belief that "openness" had not been achieved during the open education program's first year, and that the first-year's study had largely been an evaluation of a "non-event". (p.20)

Owen *et al.* (1974) compared two groups of pupils in a school in which two different programmes were running - the regular (traditional) and the open education programme:

> The "treatment" was a full school year in the open educatior program. This program is characterized by the following attributes: non graded; multi-aged; learning activities organised around resource centres; student responsibility for scheduling math, science, social studies, language arts, and reading; regular use of variable instructional techniques, including multi-classroom groups, small discussion groups, and individual activities; and the use of daily student logs for scheduling, self-evaluation, and program evaluation. (p.4)

No explanation was offered as to why a programme with these attributes should be called *the* treatment rather than six treatments, or what logical reason there could be for hypothesising that there would be any relationship between these variables and the outcomes measured.

Allen (1974) was completely mixed up with regard to open-area buildings and open education. He spoke of *open-area education* and thought that writers such as Barth were talking about what went on in open plan buildings. Without any rationale beyond a desire to test the "often-cited advantages of the open-area classroom", Allen's independent variable consisted of two kinds of classrooms: open area and self-contained. One of the findings was that "there were 'progressive' and 'conservative' elements in the programmes in both kinds of classrooms". (p.5)

Samph and Campbell (1974) took, to represent open education, pupils from a school which in 1970 " initiated an innovative curriculum and an organizational structure conducive to openness...the traditional graded organization of children and teachers was replaced by a multi-age, vertical approach". (p.38) This organisational pattern was seen as a sure means of necessitating open practices:

> The teacher must be prepared to accept a child and meet his needs at any point of his cognitive and affective development. At the same time, the child is given responsibility in decision-making, in carrying out his commitments, and in accepting the consequences of his choices and behaviour. (p.38)

The multi-age vertical organisation was seen as an adequate indication that openness was being effected, even if the meaning of 'openness' was more than that.

Innes (1973) stated:

> The open classroom setting is defined, for the purposes of this study, as one which offers the individual student choices concerning his academic curriculum.

The other value on this variable was the "closed" setting (specific assignment given) which was contrasted with the "open" setting (free choice environment). The interesting feature of this study was that each of the 15 students was observed in both the open and the closed setting. The school was conducted along those lines - part of each day was closed and part was open.

Wilson, Stuckey and Langevin (1972) set out to ascertain whether pupils in open plan schools were different. In a footnote they explained:

> Technically "open plan" refers to a form of architecture but "open plan philosophy", for lack of a better term, is used in this paper to mean the operation and aims of the school. "Open plan" unless otherwise specified, will mean the philosophy. (p.118)

It is not clear in this statement whether or not open plan philosophy can occur in a conventional school building, but elsewhere in the report it becomes clear that this is possible. The two schools in the study which had open plan philosophies essentially "were non-graded and emphasized a discovery approach to learning". (p.115) The two schools employed as control groups:

> ...used a "traditional" classroom approach to teaching with the teacher directing activities and the pupils sitting in rows of desks. Subjects were taught textbook fashion with instruction and exercise...The classes were graded and a discovery learning approach was not employed. Learning and activities were teacher-directed. (p.116)

The researchers noted that the two kinds of schools had certain features in common - projects and field trips. This calls to mind a general problem that arises in research designs that employ treatment and control groups, especially where it is not possible to achieve random allocation of subjects and treatments: that is, finding groups that are sufficiently different on the relevant characteristics without including other differences that may in fact explain the variance in the dependent variables. The authors did not express an opinion as to whether projects and field trips were open, traditional, or irrelevant. If they were irrelevant there was no point in mentioning them - presumably both types of schools used writing paper and many other items in common. If they were more typical of one type than the other, to what extent did their appearance in both reduce the discrimination of the independent variable?

Tuckman, Cochrane and Travers (1973) regarded 'open education' as the current phrase to describe informal teaching methods. A school district had engaged two schools in a programme known as Project: Open Classroom (POC) to change staff from formal to informal teaching methods. The study reported here:

> ...was conducted to assess the extent to which POC classrooms differed from control classrooms with respect to teaching *process*, i.e. the behaviour of teachers, and teaching *product*, i.e. the outcomes of students. (p.1)

Two comments are indicated. Firstly, the authors considered that open education was going through a period of identity formation and there were no defined criteria which make a classroom open. They therefore "took some of the characteristics which have been derived in the descriptive literature and assessed them empirically". It is difficult to understand why educationists find it so terribly important to be identified with a label however little they know about the phenomenon it represents. There is no indication regarding the basis on which they selected the characteristics to be assessed.

Secondly, the design of the study, and in particular the independent variable, is quite remarkable:

> The POC treatment was primarily in-service training and supervision conducted by a staff and group of consultants familiar with the underlying beliefs and organisation of open education. The treatment consisted of: 1) a three-week trip to England to study the British infant school, 2) a summer workshop, 3) consultant visitations during the year, 4) in-service workshops, and 5) classroom visitations and consultations with the POC staff. (p.3-4)

The above paragraph is a quotation, in full, of the section in the paper entitled 'Independent Variable'. The study thus turned out to be a three-tiered construction with a treatment that caused teachers to change their methods (process) which in turn led to discernible variations in student outcomes (product). When the authors concluded:

> While not affecting achievement to any measurable degree, the Open Classroom treatment has enhanced students' self-image and liking for school, thus indicating one value of a student-centered classroom approach. (p.11),

it is not clear which treatment they were referring to - the trip to England or the change in educational programme. And presumably "student-centered classroom approach", the final words in the report, is yet another synonym for 'open education' and 'informal teaching methods'.

Hoyle (1973) investigated whether the learning climate was more open in open-space or traditional high schools. He developed an instrument called the Learning Climate Inventory (LCI) "a 20-dimension instrument somewhat related to" Halpin and Croft's *Organizational Climate Description Questionnaire* and several other instruments. 'Learning climate' thus turned out to be rather more like *organizational* climate, with most of the 20 items (each 'dimension' was represented by a single item) relating to the role of the teacher *vis a vis* other staff members rather than students.

Ramey and Piper (1974) studied the effects of open and traditional classrooms on creative expression:

> Measures derived from the Torrance Tests of Creative Thinking indicated that the open classroom setting was related to superior performance on the figural component of that test, whereas the traditional classroom setting was related to superior performance in verbal creativity. (p.557)

Children were sampled from two schools which "were chosen because they exhibited sharp differences of opinion on how the process of education should proceed". (p.558) A summary of the differences, *abstracted from the handbooks* of the respective schools, was presented as evidence of the differences. It did not appear to concern the researchers that apart from differences which they implied, but did not state, represented the definitive differences between an open and a traditional school, it also happened that the open school stressed *creativity* and the other did not.

Sullivan (1974) headed her article "Open-Traditional - What is the Difference?", which looks like the beginning of a statement relating to the definition of these terms. In fact:

> The purpose of the study reported here was to determine whether pupils in an open classroom differ from traditionally taught pupils on four variables: creative thinking, creative writing, independent decision-making in performance tasks, and self-confidence when facing a new situation. (p.493)

As is often the case with researchers engaging in a relatively small study, the first step appears to have been to locate classrooms which appeared, *on the basis of general impression*, to be noticeably different in terms of openness. Sullivan has then gone the extra mile and described in considerable detail the organisation, management, activities and teachers in the respective classrooms. Although the report was comprehensive and the author drew a number of plausible inferences on probable causal relationships between classroom characteristics and children's performance, there was no statement to indicate which classroom characteristics actually constituted openness.

King (1973) defined 'open education' for his study:

> ...in terms of a learning environment wherein the following processes were deliberately stimulated: diversity of activity and problems for learners, giving rise to a wide variety of outcomes many of which may not be predictable; dialogue in which exchange and discussion of ideas may be used as a basis for the kind of collaborative thinking that might be expected in a community of scientists; growth in strength of ego in individuals such as might be observed through the assurance they display in decision-making; self-reliance in collating and sorting information; and development of communication skills, especially those relating to vocabulary and syntax.

King was concerned with Australian high schools in the State of Victoria. He considered that:

> 'Open education' is a term that refers to a general approach to learning and teaching. Prime attention is given to how and under what conditions learning can be motivated; matters of expediency in teaching and administration hold second place.
>
> In order to compare the two kinds of environments, testing for 'openness' and 'traditionalism' was carried out in three stages. First principals...were asked to indicate whether their schools were implementing 'open' or 'traditional' programs. From those whose answers were unequivocal ten schools were selected for each of the two categories...At the second stage teacher behaviour and school organisation were examined through student and observer ratings. The third stage comprised a student questionnaire designed to measure stringency of organisation in the groups in which students were obliged to work. Six open and six traditional groups conformed well to each of the three selection procedures. (Draft manuscript)

Although King appeared to have taken more trouble than most of the other researchers cited in this chapter to establish the bona fides of his independent variable, he apparently shared with the others, at least for the purpose of the study reported above, the notion that to evaluate 'openness' you need to observe school situations that are *categorically* either open or traditional. King even spoke of testing for openness and traditionalism as if these were two separate properties rather than opposite ends, or even alternative categorical values, of a property of educational practice. Certainly he has not provided a name for such a property. But granting that this last issue could be resolved with a little semantic therapy, the question of the *educational* validity of structuring research studies in this way still needs to be considered.

Is it a fact, as some would claim, that open education only works if you boldly commit yourself wholly to it in one fell plunge? And what, really, is it? King defined it as being an environment in which a number of processes were stimulated. How were they chosen? Are they all necessary to the definition? How are they interrelated? If openness happens in reality to be a continuous variable, it appears to be highly misleading and is perhaps having unfortunate consequences already in some schools that research reports construe the whole issue as an either/or situation. Equally, the notion of openness as an innovation rather than, say, a desirable trend or direction in which teachers could move, may be having

undesirable effects. King himself mentioned some of the problems in implementing openness as an innovation, but he did not discuss the possibility that innovation was an inappropriate model of change for developing openness. Perhaps the real problem is that there is still lacking an educationally valid definition of 'openness'. If such a definition were found many other issues may fall into place, including methods of promoting change and of evaluation.

The final two research projects to be discussed in this chapter were carried out for the express purpose of developing scales to measure the property of openness in education. At this point they are the only two such attempts to have achieved widespread attention in the research literature.

Walberg and Thomas (1972) were supported by a grant from the United States Office of Education to:

> ...review available Open Education literature, analyze the concept into its component parts, verify the analysis with Open Educators, and develop instruments for classroom measurement of its properties. (p.197)

They found eight themes that distinguished quite convincingly between open and traditional teachers. The themes were discovered in the writings on open education and then confirmed empirically by the use of a teacher questionnaire and an observer scale. They apparently were able to distinguish subjectively, on the basis of global criteria, between open and traditional teachers, and they did so for the purpose of validating the particular items which they thought, from reading the literature, were pertinent to the openness variable.

Their fundamental failing was that they did not push their findings into the logical corner and ask seriously whether they were dealing with *a* phenomenon or merely a set of logically distinct themes unrelated on the basis of any significant educational quality.

> Open education is difficult to characterize in the manner that behavioural scientists are accustomed to operationalizing concepts. For the approach is founded upon contingency and uniqueness; each student, teacher and event is *sui generis*. The feelings and behaviour of the open teacher cannot easily be categorized because her guiding principle is to respond as sensitively and reflectively as possible to the unique child at precise moments in the temporal stream and situational Gestalt of her interaction with him. (Walberg and Thomas, 1972, p.198)

The problems in quantifying for research purposes the activities of a teacher who could not be depended upon to act consistently in any respect other than that she always acts uniquely, are not difficult to imagine. Nevertheless, the real limitation of this research was that they were attempting to operationalise a concept without first obtaining or inventing a conceptual definition to serve as a guide to their efforts. All we know at the end is that the instrument distinguished between schools which were thought, on some other evidence, to exhibit the qualities which the instrument represented, and other schools which did not. It does not demonstrate that openness is a useful or even a viable property concept which may be employed to describe schools. Furthermore, as long as the authors continue to imagine that a concept can be analysed "into its component parts", especially when they are not even trying to focus on the meaning of 'open', their work is unlikely to reach a useful conclusion.

Perhaps the most prolific publishers of research studies on open education are a group at the Ontario Institute for Studies in Education: Traub, Weiss, Fisher and Musella. Their major exercise, from which other studies have followed, was reported under the title: Closure on Openness: Describing and Quantifying Open Education. (Traub *et al.*, 1972)

The report began admirably by asserting the need for:

> ...realistic techniques for describing and quantifying educational treatments. This paper describes an attempt at defining and quantifying a currently popular programatic innovation, open education.
>
> At the outset we must be clear about the referent of 'open education'. The term as we use it refers to a type of school program. Open education is a strategy for influencing the cognitive, conative, and affective development of children. It is the use of this strategy as a learning program that is of concern. (p.69)

The main issue in this discussion is how they proceeded to write the items for their questionnaire, which would reflect the practices (n.b. not the conceptual meaning) of open education. "...we started by defining the program characteristics of open education." (p.70)

The model for their work was provided by Gibbons (1970), who made a study of individualisation. In the view of these authors, "Gibbons' analysis of individualization yielded characteristics of school programs (e.g. pace of study)." Strictly speaking, of course, it is more likely

that an analysis of individualisation would yield a conceptual definition of 'individualisation', while a list of characteristics of school programmes would be acquired by an analysis of school programmes.

Although Traub *et al.* spoke often of "open education" as a phenomenon, their purpose was to devise a method for assessing the relative degree of openness of educational programmes. Their "procedure was to isolate those characteristics of school programs that would be likely to influence the development of open education outcomes" (p.73) and the following aspects of school programmes formed the framework for the composition of items to measure openness: setting instructional objectives, materials and activities, physical environment, structure for decision-making, time-scheduling, individualisation of instruction, composition of classes, role of teacher, student evaluation, and student control.

This seems to be a thorough approach to the task, yet some problems remain unsolved.

1. Nowhere is there given a definition of the word 'open'. The openness of each aspect of the school programme is described by reference to the literature on open education, rather than explained in terms of a single concept which applies to all aspects.

2. It is surprising to find that individualisation of instruction appears as one among ten aspects of the school programme. Gibbons (1970), whom they professed to be following in respect of their research model, portrayed individualisation as a *property* of several of the same aspects of the school programme - evaluation, decision-making, time structure, teaching method, materials, environment - to name six of the remaining nine aspects.

3. One of the authors, Fisher (1974), referred to several "dimensions" of instructional programmes, such as the extent to which they were individualised, flexible, diverse, and directly influenced by students. "These and other program facets have been included in the concept of program openness described by Traub, Weiss, Fisher and Musella (1972)" (Fisher, 1974, p.2). However, there seems to be some confusion with regard to the logical status of these dimensions or facets. "Materials and activities" seem to be of a

different order from "flexibility". They cannot both be dimensions of the same phenomenon in the same discussion.

4. In the same paper Fisher (1974, p. 3) says "the concept of program openness used in this study is that described by Traub *et al.* (1972)". Fisher listed the ten programme areas in which "characteristics relating to open education were identified" and then explained that high scores on DISC (Dimensions of Schooling - the instrument developed to quantify the openness of programmes) "are associated with programs that have relatively high diversity, flexibility and influence from students". There is something superficial about the implication that these qualities are, in combination, what is meant by openness, especially as 'individualisation' has such an equivocal status in the various lists of dimensions, aspects and qualities.

Although DISC started off in the right direction by identifying dimensions of schooling in each of which openness could be observed, Traub and colleagues apparently did not realise that 'openness' is a property term for which there must be, in a particular research study, a single conceptual definition. Without a conceptual anchor for the property being investigated there is likely to be an unending search for factors, dimensions and relationships in areas where they do not logically belong.

## CHAPTER VII

## ANOTHER ATTEMPT AT A DEFINITION

If knowledge about open education is as confused as the literature reviewed in the previous chapters seems to indicate, then any researcher presuming to define 'openness' will of necessity make a choice among a number of possibilities. Preferably he will be able to offer some good reasons for the choice that he makes.

One could have included discussion on the fine distinctions between the meanings of 'open' and 'informal' education (Etzioni, 1971, p.91); 'humanistic education' and 'free learning schools' (such as the Leicestershire schools) (Lyon,1971); 'confluent education' (Brown, 1971; Shapiro, 1972); the 'new education' (Schoenheimer, 1973); or the 'human potentials movement' and 'third force psychology' (Reavis, 1973). Undoubtedly one's criteria of relevance reflect in part a personal ideology, but hopefully in this instance, where a definition of 'openness' has been sought to provide a focal point for the Australian Open Area Schools Project, there will be at least some objective educational principles to justify the end product.

A further consideration is the question of why one would try to define 'openness' in view of the suspicion that could have arisen from an examination of the literature that it is unresearchable and such a woolly notion as not to warrant the effort. The following assumptions underlie this exercise.

1. Open education is already receiving so much attention in Australia, and is puzzling, annoying or attracting so many people, that researchers have a responsibility to help develop an understanding of the movement or phenomenon.

2. An attempt to formulate a definition or to discover the meaning of the term is an essential part of the process of finding out whether it is a meaningful notion at all and, if so, whether it is relevant and helpful in the context of education.

Granted, for now, that there is to be an attempt to define 'open education' or 'openness of education' the following criteria will be taken into account.

1. The meaning of the term must relate to the ideas and practices most widely associated with open education. This is essential if the new definition and any subsequent research are to be seen as having relevance to the subject of open education as it is understood in popular parlance.

2. The definition must make sense in terms of the logical requirements discussed at length in earlier chapters. Specifically, it is necessary to arrive at a single meaning of the term 'openness', for it is nonsensical to use a term to refer simultaneously to several concepts. There are no multi-dimensional, multi-faceted or multi-component properties, though the thing, object or entity to which a property pertains may consist of multiple parts or components.

3. If any options remain, the definition should be such that it is likely to permit research that will be of use to education. There is no point in setting up a definition, purely on the grounds that some of the literature would support it, that can be seen in advance to have no operational counterpart and/or no possible significance in educational theory.

It does not seem vitally important for the purpose of identifying the object or thing in respect of which openness is a property to make fine distinctions between education, classroom practices, schooling and instruction. However, it is pertinent to state that the focus of this present study is upon teaching practices at primary school level. 'Teaching' is of course meant to include all aspects of the learning programme and not merely those occasions when the teacher is explicitly performing to an audience of pupils, for it is assumed that the teacher is finally responsible for the programme even where there is a large measure of pupil involvement and autonomy.

Understanding or formulating the meaning of a term can never be purely a data collecting exercise. It could be argued that a survey should be taken of all teachers who claim to be open, observations should be made

in schools and classrooms thought to be open, an analysis should be made of the literature and, from all of these, tallies should be made of the frequency with which certain (open) events occur. Which events? The ones which open educationists say are important. Which open educationists? The ones I find the most convincing. On what criterion? On the basis that the events and ideas said to be important seem to form a unity, to have a common thread - a thread that is identifiable and meaningful. There has to be an intellectual synthesis and not merely a list of items (nor practices, characteristics, dimensions, factors or components), though the collection phase may be useful at the beginning.

It is proposed here, as a product of all the above considerations and criteria, and as a synthesis of the ideas, beliefs and descriptions presented in the literature and reviewed in previous chapters, that the conceptual meaning of 'openness' could be:

> THE EXTENT TO WHICH THE TEACHING PRACTICES ARE CHARACTERISED BY RESPECT FOR EVERY CHILD AS A PERSON.

'Open education' would therefore refer to education characterised by high values on the property of openness - that is, education in which the teaching practices are characterised by respect for every child as a person. However, to try and determine exactly what degree of openness is required for education to be described categorically as open would be like asking what range of intelligence quotients defines an intelligent person, or what height is a tall person, or when does a hill become a mountain.

The emphasis upon the human side of the enterprise hardly needs restating as a dominant theme of the open education literature. In fact, possibly one of the reasons why there have been so many different versions, prescriptions and ill-fated experiments with open education is that there has been an overemphasis on the human aspects of being open and some neglect of the educational. A phenomenon which has to conform to two parameters has less scope for variation than if it conforms to only one - the number of tall, fat persons is smaller than the number of tall persons or fat persons. Thus, if open classrooms and schools are specified only or mainly on the basis of various ideological views, (for example, that children should be given freedom) there would be a very wide range of practices from which children could choose.

The imagination can run relatively wild as to what practices could represent the ideological emphases of open education. But if, in addition, various cognitive learning objectives are superimposed, the range of possible legitimate activities is not so great. Some writers have presented the view not only that open education had origins in pedagogy and learning theory but also that to make classroom sense of it now it is necessary to think in terms of the learning experiences that are available to children.

Perhaps it could be objected that this definition is a highly loaded expression which merely begs a whole lot of questions. Is it implied that traditional teachers treat children as non-persons? And what sort of person does the open educator believe in - allegedly there are many varieties of open education? Several comments are required.

Firstly, it is proposed that in fact there is not such a great variety of beliefs about what children are like. Australians in their more thoughtful moments would give almost total support to a statement that it is good for children (being persons and not some other kind of organism) to achieve or experience recognition, status, security, encouragement, friendship, independence, confidence, self-respect, curiosity, imagination, responsibility, enjoyment and so on. However, since this supposed consensus cannot be demonstrated here, let it be stated that in any case it is these sorts of needs, attributes and entitlements that lie behind the use of the word 'person' in the definition of 'openness'.

Secondly, there is an apparent contradiction between the supposition that virtually all Australians would agree with the proposed concept of a person and the assumption that teachers vary significantly (otherwise there would not be a variable) in the extent to which they teach in a manner consistent with this concept. The proposed explanation is that the differences are mainly pedagogical in origin - due more to a lack of rational application of beliefs to teaching practices than to a basic belief that children should be treated like performing bears. Many teachers have a deeply entrenched perception of what schools should be like, and this is independent of their personal belief regarding the nature of children. The trouble may be that teachers themselves are trained rather than educated - they are not treated as persons during their college experience. Many students do not learn how to be teachers through the out-working of basic principles in practical experience, but are trained to carry out techniques and apply formulas with

minimal understanding of their bases in learning theory, educational objectives, or what is known and believed about children as persons.

Thirdly, although it is reasonable to infer, from the above definition, that at the negative end of the openness scale children would be subjected to teaching practices in which they are not respected as persons, it is not to be inferred that all teachers who do not claim to be open educators, or who have never heard of open education, are characterised by inhumane treatment of their pupils. Neither, for that matter, should it be assumed that all professing open teachers are superhumane. Openness is an abstraction, a property, which it is thought may be useful in distinguishing among teaching practices.

It is important to appreciate that the concept of person has implications for learning theory, for learning *as an autonomous purposeful activity* is very much more characteristic of persons than of non-human organisms. Training is the process by which animals are taught to perform, a process that requires the constant imposed intervention of the trainer. In the educational context it could be said that respecting children as persons entails enabling children to learn, and vice versa.

'Openness' has been defined for the purpose of this Project by using the phrase 'respect for every child as a person'. Some elaboration has already been attempted in order to indicate that there are ideological and not merely biological connotations when the word 'person' is used in this context. It is a legitimate form of exposition to explain the meaning of a concept at great length where the short conceptual definition does not satisfy the needs of an enquirer. There is no need to feel that a short definition is improper merely because it requires extended elaboration. The important principle is that a definition reaches to the most fundamental meaning of a term and does not stop short at a mere description of various characteristic attributes or correlates. Once the basic meaning has been expressed (respect for every child as a person) it may then be highly desirable, as has been attempted here, to expound the connotations of such a definition.

Some of the connotations of 'respect for every child as a person' as it is understood for the purpose of defining 'openness' may be expressed in terms of the kinds of emphases which should become apparent in an open classroom. These may be listed as a series of propositions which have as their source a particular view of the nature of children.

1. Children will be active participants in all aspects of their learning programme because persons as such not only are capable of being so involved at an early age but also must be given the opportunity to develop the capacity for self-direction and autonomy which are characteristic of a properly developed adult person.

2. In the open classroom there will be a considerable variety of activities at any one time as well as from time to time because the children (being persons) differ with regard to their previous achievements, current and long term interests, and rate of progress towards the various educational goals.

3. Children will feel that the teacher respects them as individual persons and does not require them to conform unreasonably or unnecessarily to stereotyped behaviours and activities.

4. The classroom will function as far as possible as a community, with minimal emphasis upon status differences, arbitrary rules and formal authority, because it is understood that persons as such have the need and the potential to develop genuine personal relationships and to function in a democratic community.

5. The curriculum will place emphasis upon the development of skills and upon learning how to learn. Where rote learning is considered necessary care will be taken to ensure that children understand the material being learnt or appreciate the reasons for learning it. Mindless performance of automatic responses is not characteristic of persons learning, for persons as such are able and desire to act intelligently and meaningfully, and to do less than this is to act at a level less than is characteristic of persons.

These propositions are intended to illustrate the connotations of the definition of 'openness', but they also lead to the reconsideration of the theoretical issue which was raised in Chapter III. It may be possible to construe each of the above propositions as a variable or property of teaching practices in its own right.

1. Pupil involvement.

2. Variety.

3. Individualisation.

4. Sense of community.

5. Emphasis on skills and meaningful learning.

But do these not look suspiciously like sub-concepts or factors of openness?

Each of the above expressions does represent a property or variable which could possibly be used to describe teaching practices. However, to be useful as sub-concepts in Rosenberg's sense of the word (which appears to be illegitimate anyway) they would have to be to some extent independent of each other and of the global score on openness itself. But a convincing form of evidence presents itself when one attempts to write an item or select a teaching practice that represents just *one* of these properties and not most of the others as well. It turns out to be extremely difficult. Just as important, it is likely to make sense to use the term 'openness' to describe what is being measured by an item written to measure any one of the other properties.

The real issue is whether an item is measuring openness. Is this teaching practice characterised by or indicative of respect for every child as a person or of its negative or neither of these? If it represents one or the other of the poles of openness it is superfluous to ask what else it measures, because this exercise happens to be concerned with whether 'openness' can be operationalised in the context of education. A more profitable pursuit, where there appears to be conflict on account of having a *single property* measured by several sets of items which seem to be qualitatively different, is to examine whether each set relates to a particular aspect or component of the object (teaching practices) to which the property pertains.

After all, every individual item in an instrument designed to measure a property could be said to represent a different concept or property, but in accordance with the principle that a concept, once understood, is independent of the instances from which it has been abstracted, it is necessary in a particular measurement exercise to regard each item as an example or manifestation and not as a sub-concept. (See Chapter III for a discussion of this issue).

Any researcher can choose the meaning to be given to each of the key terms in his hypotheses. If he wants to contribute to the total research effort it makes sense to adopt the meanings employed by others, provided that they have not been discredited. In the realm of open education it has not been possible to find, for the purpose of this project, in either research reports or descriptive literature, a reasoned commitment to any particular meaning of 'openness'. The present attempt is based on procedural principles which have been explained in this chapter. Whether the property of openness is a useful one in educational theory requires further analysis and empirical investigation.

# CHAPTER VIII
## A MEASURING INSTRUMENT

In the previous chapter a conceptual definition of 'openness' has been proposed. A researcher may attach any meaning he wishes to a term to be used in a hypothesis, but it is more likely to serve a useful purpose if he employs a meaning that is already, or is likely to be, widely accepted.

It appeared that no precise statement on the meaning of 'openness' had been made by any widely acknowledged researcher. It was therefore necessary to draw upon the literature in a general way to formulate a definition that hopefully would be seen by a worthwhile number of educationists as being relevant to their perception of open education. Another criterion was that the meaning should have a reasonable chance of proving viable and useful in continued research and the building of theory. There would be no value in devising a definition that would assuredly be shown empirically to be trivial and irrelevant to the real world of education.

The proposed definition of 'openness', being a property or quality of education, is that it is the extent to which the teaching practices are characterised by respect for every child as a person. Some of the implications and connotations of such a definition were discussed and the rationale defended. However, its validity comes under further scrutiny when an attempt is made to devise a measuring instrument.

The phenomena being investigated in a particular research study are often collectively referred to as 'the domain'. In a study of openness in education it is thought appropriate that the domain (education) should be defined specifically in terms of teaching practices. Learning is an active process, and the essential involvement of persons means that the whole situation is dynamic rather than static. It is conceivable that certain static components of the total classroom scene, such as large furniture and architectural features, have a positive or negative influence upon educational processes but the study of such causal factors would be a separate issue.

Assuming that the domain to which openness pertains is that of teaching practices, it is still likely that some practices do not reflect openness in any way. Other practices, taken at face value, may be ambiguous because in some circumstances they represent a high degree of openness and in others a low degree. Another consideration is whether the practices fall into logically coherent sub-sets of the domain which may yield sub-scores of openness.

Two studies which have employed a classification of classroom practices most similar to the possible sub-sets envisaged here are those of Gibbons (1970) and Traub *et al.* (1972). Gibbons' work involved a conceptual analysis of the dimensions or components of school practices which are pertinent to the property of individualisation. Because individualisation is not identical to openness, some of the categories pertaining to individualisation may not be pertinent to openness. Gibbons was working towards a means of classifying school programmes:

> ...according to the curriculum elements that are individualized in them. But the elements fundamental to individualization vary in the degree to which they have been individualized as well as in kind. A more comprehensive summary, one that will account for these differences in a program, can be achieved by recording graphically the level of individualization in each element. (Gibbons, 1970, p.38)

Thus, in principle, Gibbons has recognised that a single property (individualisation) may be measured in respect of numerous aspects, components or elements of the school programme. For the purpose of using individualisation as a research variable, if there was any apparent value in doing so, it would therefore be necessary to specify the elements in which individualisation was being measured. His main problem, which he acknowledged, was a conceptual one in respect of the term 'individualisation, for it seems that up to a point, the more thoroughly a teacher provides a tailormade (that is, highly individualised) programme for individual students the less freedom the students have to make their own curriculum decisions, yet "student-determined programs are demonstrably more individualized". Although Gibbons' analysis of 'individualisation' is probably the best available, it would perhaps have been better for empirical research purposes to recognise that he was looking at two or more distinct concepts. It is not satisfactory to persist with a meaning that is self-contradictory.

Traub *et al.* (1972, p.73) isolated "those characteristics of school programs that would be likely to influence the development of open education outcomes". Their operationalisation of 'openness' in each characteristic is based directly on the writings of commentators such as Barth, notwithstanding that Barth himself warned that the assumptions of open education as he itemised them were in some respects inconsistent.

This process differs from the one which must be followed in the present study. Having derived a conceptual definition of openness (even though it may be difficult to operationalise and may not survive empirical tests of theoretical significance) the next task is to determine what elements of teaching practice lend themselves to being described in terms of openness.

Looking at the work of Gibbons and of Traub *et al.* one could compile a tentative list of elements such as objectives, materials, motivation, activities, decision-making, time-scheduling, individualisation, grouping of pupils, evaluation, control, attendance, teacher role, environment, and perhaps others. But this list would need to be refined in the light of several considerations including the following which relate specifically to the problems of constructing a questionnaire or scale to measure openness.

1. It is not legitimate to include in the list of dimensions or elements of teaching practice terms which are synonymous or nearly synonymous with 'openness' or in any case are themselves also *property terms* applicable to teaching practices. For example, 'respect for every child as a person' immediately involves the fact that persons are all different from each other, and if they are respected as persons then their learning programmes will also differ according to their needs, capabilities and interests. But this is largely what is meant by 'individualisation'. It would seem then that individualisation, though not in all the senses which Gibbons expounded, must be seen as running through or involved in all the measures of openness. Individualisation cannot simultaneously also be an element or component of teaching practices such that openness is one of its properties.

2. Every item in an instrument will need to represent a particular teaching practice that is perceived as *open* or *non-open*. No useful measurement purpose is served by itemising practices that are not clearly on one side or the other.

3. In general, discrimination among schools or teachers or classrooms will be achieved by calculating the extent to which open and non-open teaching practices are adopted. The global scores on openness are thus an accumulation of the frequencies with which open or non-open practices occur. This is normal practice in measuring research variables - even though they may be considered to be continuous variables the instruments consist of items each one of which yields only limited, categorical information. For example, although a mathematics test has items which vary in difficulty, a correct response to a particular item is merely a step towards the high end of the scale and an incorrect response is a step towards the other end.

4. However, in a questionnaire to measure openness, instead of the *responses* being right or wrong and the *items* being more or less difficult, the *items* will be positive or negative and the *responses* can be in terms which give some indication of degree of commitment, or frequency, or extent to which the statement in the item is true of the teaching practices. This is a difficult concept to convey in a questionnaire, yet it has to be attempted. An open practice that *hardly ever* occurs should not carry the same weight in a total openness score as the same practice that *very often* occurs. But what, specifically, does 'often' mean? It has a different time reference depending on whether the practice is, for example, conducting examinations or speaking to pupils.

5. The value in seeking to obtain scores on openness depends on the premise that there is some stability and predictability of opennes of teaching practices. However, the domain in which openness can be recognised must be comprehensively sampled on the other premise that not all aspects of the domain would be equally open for any one teacher or classroom. If this were not so, one item, or a few, could represent the entire domain.

6. If teachers themselves are to be the source of information from which scores on openness will be derived then a reasonable effort must be made to write items that are non-threatening to the teachers. But is this possible, given that openness has been defined at least partly in terms of a particular view of human nature and therefore is value laden? This problem is mitigated by the fact that as the domain is that of teaching practices it is possible to write items in relatively concrete terms which do not highlight the desirable responses. It also remains a fact that many teachers see their own practices, whatever they are, as desirable and inevitable and would feel no threat at having to disclose them. Nevertheless, any additional measures such as anonymity, or gaining the confidence and co-operation of teachers in other ways, are highly desirable.

7. A final consideration relates to whether the researcher is interested in discriminating amongst teachers (or classrooms) or rather in making a status report on the extent to which open teaching practices are occurring in schools. In the latter case there would be less need to engage in item validation, for reporting could be in terms of particular practices rather than global scores. However, where it is desirable to investigate relationships between openness and other educational variables then a harder line may be required with items which are interesting but do not correlate significantly with the instrument as a whole.

At this stage note has been taken of several considerations relating to the techniques of measurement, and a tentative list (in the paragraph preceding 1. above) of dimensions or elements of teaching practice has been assembled of which openness might be a measurable property. The remaining task is to make finally clear the status of various manifestations of openness and their relationship to the respective elements of teaching practice.

In the previous chapter it was pointed out that several phenomena or qualities such as pupil involvement, variety, individualisation, sense of community and emphasis on skills and meaningful learning were related by reason of the fact that they are manifestations of openness. To that

short list could be added others such as flexibility, informality, warmth, independence, democracy and so on which are often referred to in the literature of open education.

It was suggested in the previous chapter that these various terms, where they appear to be not truly synonymous with each other, may refer to specific indicators of openness in different elements of teaching practice. For example, sense of community may seem particularly relevant to the element of discipline or classroom management, while skills and meaningful learning may pertain to objectives or curriculum. However, other property terms such as 'flexibility' and 'informality' are more general such that they could be applied to almost all aspects of teaching practice.

It would not have been surprising to find that the different elements of teaching practice require different kinds of items to represent the same property concept. (To measure ripeness requires different kinds of evidence for each kind of fruit - a banana turns yellow, a cherry red, and so on.) But measuring openness is not as simple, even in principle, as may at first have appeared.

The supposedly distinct elements of teaching practice are to an important extent facets of the domain rather than things which happen separately. Thus, a single learning activity may occur: within certain time allocations (fixed or flexible); for certain reasons (motivation: interested or coerced); and with certain materials (chosen by the pupil or prescribed by the teacher). In other words, the quality of openness is manifested in different ways in various elements simultaneously. But beyond this, even a manifestation of openness such as emphasis upon children's interests, which on first thought seems to be related to the element of motivation, can just as logically be seen as describing or determining what occurs in other elements: time-scheduling, assessment procedures, organisation of classes and groups, learning activities, selection of materials, general classroom management, and even educational goals - aiming to develop interests may be a prime reason for encouraging children to pursue their current interests.

Thus, in the present project, die-hard believers in sub-concepts experienced a notable lack of success in applying *particular* synonyms to the respective elements of teaching practice. It was at first thought obvious that 'flexibility' was the term to use with time-scheduling though 'informality', 'individualisation' and others were found to be significant contenders. Openness in motivation would have to be described, of course, by emphasis upon children's interests or a cliche such as 'intrinsic versus extrinsic'. This was not an idle exercise; it was thought to be essential to have a term other than 'openness' to describe every measure of openness. But the writing of items relating to the element of assessment proceeded (uneasily) on the basis of a global understanding of what 'openness' meant, and despite valiant attempts to provide a particular synonym the assessment sub-scale stood as a measure of openness.

The same kinds of circles appear with every attempt either to tidy up the domain or to fragment the concept of openness. The domain (teaching practices) consists of identifiable but intertwined elements. The property of openness remains intact. The logical principle that a property term (such as 'openness') must have a single meaning or else be replaced with multiple terms, is borne out in practice by the fact that any item written for one of the (supposed) sub-concepts of openness inevitably could be used equally well to measure one or more of the others.

The Australian Open Area Schools Project has compiled, as a product of the kind of thinking represented in this report, an instrument to measure openness with items relating specifically to the following elements of teaching practice:

Time scheduling
Motivation
Assessment
Joint effort among teachers
Location and grouping of pupils
Particular learning activities

It is not the purpose of this report to provide a detailed account of the rationale behind every item and the reasons for excluding other candidate items and even other elements of teaching practices. For example, there was strong intuitive feeling among some participants that openness should be manifested in the area of goals or objectives, but all attempts to produce a suitable method of differentiating between open goals and non-

open goals were unsuccessful, which may indicate, as was suggested in the previous chapter, that the basic differences between open and other teachers are pedagogical rather than ideological.

The sub-scale entitled 'joint effort among teachers' was of debatable relevance in an instrument to measure openness directly relating to pupils' experiences, but it could nevertheless be supported on the grounds that 'respect for every child as a person' requires that the school should function as a community. The scale was retained in any case because of its wider relevance to a concurrent study of the effects of school architectural design.

This chapter is an attempt to convey an impression of the kinds of thinking which lay behind the development of an instrument to measure the variable *openness* in education. The chief aim has been to illustrate in the final, practical situation the application of the principles developed in earlier chapters. Subsequent reports will describe the instrument in greater detail as well as indicate the results of the responses from teachers in 120 schools throughout Australia.

It remains, in the final chapter, to discuss briefly the possible significance of openness in educational theory.

## CHAPTER IX

## THEORETICAL SIGNIFICANCE

Most of this exercise has been concerned with the process of developing the concept of openness in education to the stage where it can meaningfully be used in research hypotheses. If this has been successful it may be said that the concept is "reliable", according to Brodbeck (1963, p.48).

The next question which needs to be considered is whether the concept is likely to be significant. Will it prove to be of value in theoretical statements relating to education?

There are many points of view concerning the potential value of basic research in education. Ebel was pessimistic on the grounds that:

> The search for a simple structure of basic variables underlying the apparent complexities of human behaviour has motivated much of the work in factor analysis for decades. So far the search has not been notably successful. (1967, p.20-21)

Ebel also considered that:

> Science has been defined as the systematic study of natural phenomena for the purpose of understanding them. But formal education (i.e., purposeful instruction), which is what we are trying to improve, is not a natural phenomenon. It is a human invention, a construction, a cultural institution designed and built by men. (p.18)

Carroll, on the other hand, saw a continuing need for what he called basic research, pointing to the fact that it was Skinner's "basic research, of an extensive and profound character", that led to propositions about learning which were later applied in the development of programmed learning. The fact that there has been some subsequent confusion and lack of success with such programmes under certain conditions indicated to Carroll that:

> Without the necessary basic research into the detailed processes of perception, learning and forgetting that underlie programmed instruction, further "engineering" development will make little headway. (1968, p.273)

Ebel's comment about education being a man-made phenomenon and therefore not susceptible to basic research requires closer examination. If it is true, and if this means that it is impossible to discover basic educationally relevant variables and general laws which relate them to each other, then all research studies which seek to establish significant relationships between variables pertinent to education are a waste of time. But there is an important assumption implicit in such assertions. It concerns the meaning of 'natural phenomena'. Ebel stated that "Basic research seeks eternal verities" (p.15). He apparently excluded the work of man from the realm of natural phenomena on the grounds that cultural institutions are not eternal. This is a debatable criterion of natural phenomena. Presumably the goal of research is ultimately to specify the conditions under which X has a certain effect on Y. The problem may be not that man and his institutions fall outside the category of natural phenomena but rather that the conditions are exceedingly complex and constantly changing.

Without attempting to unravel all the issues which could be raised in this debate on the role of science in the study of man it will be assumed for the moment that it is still important to address the following questions: In what kinds of theoretical statements might it be useful to include the term 'openness'? With what other variables could openness conceivably be related? What sort of concept is 'openness'? Several points may be made.

It may be suggested that 'openness' has here been defined in terms that are so obviously related to 'goodness' that there can be no doubt that classrooms *should* be high on openness regardless of research findings which attempt to relate this variable to outcome variables. This may be so strongly the case that any apparent negative findings would have to be discarded on the assumption that the research was either faulty or irrelevant. It can hardly be denied that this appears to be the situation. How could anyone refute the claim that teaching practices *should* be characterised by respect for every child as a person?

Then what must be said about the proposition frequently made that open education suits some people better than others and that interaction models should be the guide for research into this subject? The reply must be, *if* one accepts the definition of 'openness' presented in this report, that these "others" are children and teachers who already lack some of the

qualities which they (the adults anyway) would almost certainly acknowledge, if they were given time to think, are essential attributes of persons.

But does this extravagant claim not run counter to one of the basic premises of openness that individuals differ in all sorts of ways? The answer is embedded in the question. If it is true that persons differ, and if a teacher cannot teach consistently with that principle, then that teacher is deficient in either understanding or ability, or both.

There is nothing theoretically invalid or professionally wrong with having a variable, or conceptualising a property, that is accepted as intrinsically good at one end of the scale and bad at the other. The important thing is to recognise it as such and to conduct research that is compatible with that situation. Researchers occasionally investigate the relationship between nutrition or health and intelligence or achievement, without any suggestion that if neutral or even negative relationships were found it should be concluded that poor health is better than good health.

If openness represents a positive quality, then it should be seen as a *goal* which is not negotiable. It is not appropriately evaluated by procedures which seek to determine its value *as a means* to the achievement of other objectives. It is not merely a strategy, but is a goal in itself. This probably means that in research it is more likely to be relevant as a dependent than an independent variable.

A research project which seeks to discover relationships between openness and particular cognitive outcomes should thus be regarded with caution. A total score on openness, for example, may be of no value in explaining children's mathematics achievement. It is analogous to the use of a total score on time spent in school which takes no account of time spent learning mathematics. It would be reasonable to expect pupils to learn more and better mathematics where there are open teaching practices than where there are non-open teaching practices, all other things being equal; but in a typical research study it is extremely difficult to ensure that all other factors are equal or properly accounted for. Damage can therefore be done by setting out to find whether open teaching practices achieve certain objectives better than others, for a negative finding leads readers who have a little knowledge to reject the other qualities of open education that are just as important as the learning of mathematics.

But it is necessary to reconcile all this with comments in a previous chapter that it is possible, and perhaps desirable, to regard open education as having risen from a research base established by Piaget and others. There is no contradiction, for values must relate to things, and the things in this instance include the findings of researchers and philosophers about the nature of human beings, including the way they learn. It is not logically necessary for anyone to accept these findings and to value the development of persons along the lines which are implied, but as explained in Chapter VII it is likely, in Australian society, that in their more thoughtful moments most people would do so.

There is, then, a property of education entitled 'openness', which represents a set of beliefs about persons. The beliefs relate partly to the findings of researchers and partly to ideological commitments which are independent of systematic research. But these twin sources are seen as complementary. There is no difficulty in conceiving of a person believing and valuing a proposition that has arisen as a result, at least in part, of scientific research.

An instrument to measure openness can, in principle, be used to describe teaching practices. The scores may be used as a dependent variable where openness is a quality which is being aimed for, or as an independent variable where it is desired to relate openness to selected learning outcomes.

Whether openness, being the extent to which teaching practices are characterised by respect for every child as a person, is a concept which will be of long term benefit to education remains to be seen. Its usefulness will depend on whether it helps teachers as they endeavour to keep particular goals and methods under scrutiny and ensure their continual relevance to changing times and individual pupils.

## REFERENCES

Allen, D.I. 1974. Student performance, attitude and self-esteem in open-area and self-contained classrooms. *The Alberta Journal of Educational Research.* XX (1), 1-7.

Barth, R.S. 1972. *Open Education and the American School.* New York: Agathon Press, Inc.

Bell, Glenys. 1975. The open classroom: little by rote, but housie by logarithm. *The National Times.* March 3-8, 1975, 14-15.

Brodbeck, May. 1963. Logic and scientific method in research on teaching. In (*Gage, N.L. (Ed.) 1963*).

Brown, G.I. 1971. Human is as confluent does. (Occasional Paper No. 9: Development and Research in Confluent Education, University of California, Santa Barbara).

Carroll, J.B. 1968. Basic and applied research in education: definitions, distinctions, and implications. *Harvard Educational Review.* 38(2), 263-276.

Charters, W.W. Jr. 1967. The hypothesis in scientific research. University of Oregon. Mimeograph.

Charters, W.W. Jr. and Jones, J.E. 1973. On the risk of appraising non-events in program evaluation. *Educational Researcher.* 2(11), 5-7.

Dornseif, A.W., Gross, Susan, Sewell, A.F. 1974. Multivariate evaluation of student selection strategies in open and traditional education (a preliminary report). Mimeograph.

Dreeben, R. 1968. *On What is Learned in School.* Reading, Massachusetts: Addison-Wesley Publishing Company.

Dubin, R. 1969. *Theory Building.* New York: The Free Press.

Ebel, R.L. 1967. Some limitations of basic research in education. *Phi Delta Kappan.* Oct. 1967, 81-84.

Ebel, R.L. 1975. Educational tests: valid? biased? useful? *Phi Delta Kappan.* 57(2), 83-87.

Etzioni, A. 1971. Essay review of *Crisis in the Classroom* by Charles E. Silberman. *Harvard Educational Review.* 41, 87-98.

Fisher, C.W. 1974. Educational environments in elementary schools differing in architecture and program openness. Paper presented at the annual meeting of the American Educational Research Association.

Gage, N.L. (Ed.). 1963. *Handbook of Research on Teaching.* Chicago: Rand McNally & Co.

Gibbons, M. 1970. What is individualized instruction? *Interchange.* 1(2), 28-52.

Hein, G.E. 1973. Piaget, materials, and open education. *E.D.C. News.* No. 1, 7-10.

Henderson, R.W. 1973. Accountability and decision-making in open education. *Childhood Education.* April 1973, 368-372.

Hird, A.T. 1972. Open education. *Educational Magazine.* 29(8), 12-14.

Hoyle, J.R. 1973. Are open space high schools more open? *The Journal of Educational Research.* 67(4), 153-156.

Innes, R.B. 1973. Environmental forces in open and closed classroom settings. *The Journal of Experimental Education.* 41(4), 38-42.

Kaplan, A. 1964. *The Conduct of Enquiry.* Scranton, Pennsylvania: Chandler Publishing Company.

Kerlinger, F.N. 1965. *Foundations of Behavioral Research.* New York: Holt, Rinehart and Winston, Inc.

King, R.C. 1973. Innovation in the curriculum: a case study of Open Education. In (*Musgrave, P.W. (Ed.) 1973*).

Kohlberg, L. and Mayer, R. 1972. Development as the aim of education. *Harvard Educational Review.* 42(4), 449-496.

Lyon, H.C. Jr. 1971. *Learning to Feel - Feeling to Learn, Humanistic Education for the Whole Man.* Columbus, Ohio: Charles E. Merrill Publishing Company.

Musgrave, P.W. (Ed.). 1973. *Modern Studies in the Curriculum.* Sydney: Angus and Robertson.

*Nation's Schools.* 1971. Open education: can British school reforms work here? Vol.87(5), 47-51.

Nyquist, E.B. 1971. The concept of open education. *The Education Digest.* November 1971, 9-12.

Owen, S.V., Froman, Robin D., and Calchera, David M. 1974. Effect of open education on selected cognitive and affective measures. Paper presented at the annual meeting of the American Educational Research Association.

Pilcher, P.S. 1972. Open education: in Britain and the U.S.A. *Educational Leadership.* 30(2), 137-140.

Ramey, C.T. and Piper, V. 1974. Creativity in open and traditional classrooms. *Child Development.* 45, 557-560.

Rathbone, C.H. 1972. Examining the open education classroom. *School Review.* 80, 521-547.

Reavis, C.A. 1973. Neibuhr's children and ours. *The Educational Forum.* XXXVII (3), 307-312.

Reschly, D. and Sabers, D. 1974. Open education: have we been there before? *Phi Delta Kappan.* June 1974, 675-677.

Resnick, L.B. 1972*a*. Teacher behavior in an informal British infant school. *School Review.* 81, 63-83.

Resnick, L.B. 1972*b*. Open education: some tasks for technology. University of Pittsburgh. Mimeograph.

Rogers, V.R. 1972. Open schools on the British model. *Educational Leadership.* Feb. 1972, 401-404.

Rosenberg, M. 1968. *The Logic of Survey Analysis.* New York: Basic Books, Inc., Publishers.

Rudner, R.S. 1966. *Philosophy of Social Science.* N.J.: Prentice-Hall, Inc.

Samph, T. and Campbell, P. 1974. Open education: students in transition. *The Elementary School Journal.* Oct. 1974, 37-41.

Schoenheimer, H. 1973. Out with exams, in with the raffle. *The Australian.* July 4, 1973.

Sewell, A.F. and Dornseif, A.W. 1974. Controlled multivariate evaluation of open and traditional education at the junior high school level: the first-year report. Paper presented at the annual meeting of the American Educational Research Association.

Shapiro, S.B. 1972. Developing models by "unpacking" confluent education. (Occasional Paper No. 12: Development and Research in Confluent Education, University of California, Santa Barbara.)

Snow, R.E. 1973. Theory construction for research on teaching. In (*Travers, R.M.W. (Ed.) 1973*) 77-112.

Staples, I.E. 1971. The "open space" plan in education. *Educational Leadership.* Feb. 1971. 458-463.

Sullivan, J. 1974. Open - traditional - what is the difference? *The Elementary School Journal.* May 1974, 493-500.

Traub, R.E., Weiss, J., Fisher, C.W., Musella, D. 1972. Closure of openness: describing and quantifying open education. *Interchange.* 3, 69-84.

Travers, R.M.W. (Ed.). 1973. *Second Handbook of Research on Teaching.* Chicago: Rand McNally & Company.

Tuckman, B.W., Cochran, D.W. and Travers, E.J. 1973. Evaluating the open classroom. Paper presented at the annual meeting of the American Educational Research Association.

Walberg, H.J. and Thomas, Susan C. 1972. Open education: an operational definition and validation in Great Britain and United States. *American Educational Research Journal*. IX, 2, 197-207.

Westbury, I. 1973. Conventional classrooms, "open" classrooms and the technology of teaching. *Journal of Curriculum Studies*. 5(2), 99-121.

Wilson, F.S., Stuckey, T. and Langevin, R. 1972. Are pupils in the open plan school different? *The Journal of Educational Research*. 66(3), 115-118.

Wilson, Lorraine. 1972. How open is open? Or, when is an open classroom closed? *Curriculum and Research Bulletin*. 7(4), 131-135.

53249/12/75-400-L/2213

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